ESSAYS IN ACCOUNTING THEORY

CARL THOMAS DEVINE

Volume II

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FOREWORD

These essays may or may not belong to what is generally considered to be the field of accounting, but they are related to what accountants do, and if the definition is not too rigid, they form a book. Many of the essays are repetitious, for, in spite of the complicated jargon of modern scientific method, the message is comparatively simple. Accountants are concerned with individuals striving for objectives. Accountants attempt to furnish an information-control system that helps these individuals attain their goals. In the process accountants identify events that promise to be pertinent to future decisions and actions; they select aspects of these events that promise to be useful, and they construct conventions for measuring and reporting relevant aspects of the selected events. In short, accounting is a part of behavioral science.

The reader is warned of numerous footnotes and long quotations that may add up to a form of intellectual name dropping. In part, these notes are a violent reaction to the general callousness of many current writers, who all too often quote a late easily-reached article or, worse, do not quote at all. The reader should be warned also of the vocabulary that is currently popular in business and behavioral science. This when combined with technical accounting terms and the writer's weakness for complicated grammatical forms may sometimes result in slow and difficult reading. Workers in related fields often express their research output with this vocabulary so that a little additional effort on the part of the reader may prove to be beneficial.

There is a monumental debt to a host of bright and interested students who responded to being treated as rational beings. A debt of equal magnitude is due my colleagues and former colleagues who, between weary classroom sessions, have spent innumerable smoke-filled hours arguing and wrangling endless succession of problems. The list is a long one. Laura MacAdams, Sue Heines, Jeremiah Lockwood, Oscar Nelson, Fred Woodbridge, Val Lehnberg, Edwin Lamb, Robert Dinman, Malcolm Pye, James Lanham, Lawrence Benninger, Richard Mattessich, Billy Goetz, David Green, Jr., Charles Horngren, George Sorter, Sidney Davidson, Hadibroto, Tan Hian Kie, Rogo, Rosalinda Atienza, and members of the Ivory-Tower Committee: Maurice Moonitz, Myron Gordon, Carl Nelson and Paul Kircher. Among teachers the following deserve special notice: Benton Talbot, who insisted that being a bookworm is a respectable activity for a mature human being; William A. Paton, whose non-nonsense approach to intellectual activity was a pleasant shock; A. P. Ushenko, who encouraged minds to be a little erratic and, if possible, develop mutations in the form of useful insights. For Drue and Steve, who somehow refrained from mutiny.

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THE UNIT PROBLEM

The purpose of this essay is to register a mild protest about the general sterility of the entity - proprietorship - fund discussions and to emphasize the importance of unit selection in accounting measurement. Surely there are more importance differences between the selection of a reporting viewpoint than whether the accounting equation is to be written A - L = P or A = L + P. Surely the entity approach has more to offer than a squabble over whether interest charges are expenses or income distributions. Just as surely a switch to the entity view does not guarantee the ascendancy of the income report or herald the end of status reports. Certainly the fund approach implies more than reduced emphasis on legal considerations and a highly questionable reduction of behavioral overtones.

Accountants who insist that an accounting entity is an area of interest and that measuring and reporting are purposive activities are on the right track. The entity-selection problem requires identification of the individuals and groups contending for information, and the problem also requires recognition of the kinds of information wanted, it is usually impossible to provide adequate information for all individuals so that a selection process based on an ordering of the contending parties according to importance is required. A further ordering of the information with respect to each party is also necessary.

Now this ranking of psychological entities may be done in an explicit manner, or it may be done implicitly (by default) by selecting procedures on the basis of non-personal criteria. The selection of the proprietary approach, for example, tends to rank the needs of residual owners extremely high but need not neglect completely the interests of creditors, suppliers, taxing units, national income computers, workers, etc. The fund approach, at least in the Vatterian version, places the interests of managers in a prime position and views creditors not as individuals with important informational needs but as restricting influences on managerial freedom of action. Creditors and other non-managers are outsiders who do little more than make up the environment. The entity approach apparently started on a desirable path by emphasizing the organization in relation to all kinds of individual and group interests. Unfortunately, some advocates have seemed to lose sight of the obvious advantages of the approach and have emphasized an abstract organization or the interests of equity holders. The peculiar needs of managers and other groups have been practically submerged. Perhaps each accountant will appraise need and worthiness differently. The merit of the entity view is that it can be based on the concept of an organization with co-operating and contending individuals with diverse objectives. It is impossible to avoid drawing some line between insiders and those outside the organization, for such lines must be drawn for routine measuring and reporting. Adoption of the entity approach does not imply a necessary

ordering of interests and definite boundaries between insiders and outsiders. These boundaries may be modified through the selection of classification and measurement rules.

This essay examines some accepted recognition and measurement conventions and some of their alternatives. Attempts are made to relate them to different units and to speculate about the usefulness of each. The discussion begins with a broad look at the entity, moves to individual assets and liabilities as opposed to group totals, considers losses on units of inventory when value of total stocks is unimpaired, and concludes with a note on the cost of shrinkage and unsuccessful exploration. We begin with the old, but important, procedural problem: whether to select small units and aggregate them so long as they prove to be useful or select instead a large unit and use imputation devices until interest wanes. Of course, accountants in practice are not restricted to one or the other; fortunately they may combine both.

Many of the arguments and controversies in accounting result from undisclosed differences in the point of view adapted with regard to the accountability units selected. Economists have often considered a business organization or even an industry to be a monolithic structure with its components highly synchronized as to objectives and motivation. The accountant, burdened with problems of measurement and reporting has been less rigid and has generally directed his observation and measurement conventions to parts of the organization that seem manageable and has assumed that the results may be aggregated for the entire organization. Moreover, his approach to behavioral reactions has tended to be of the simple stimulus-response type without the holistic niceties of psychological fields and Gestalt ambiguities. It is also interesting to observe that economists of the older school often adopted a longrun view (a long-time horizon) while accountants, in spite of claiming the going-concern concept as their very own, have often proceeded as if the organization's history is composed of numerous piecemeal conversions and liquidations. Clearly the selection of units has important methodological and theoretical consequences and is too important to be neglected or tossed off in a cavalier manner.

The simplest unit for measuring income would seem to be the entire organization. Some sort of community of interests is selected for the entity and a set of rules adopted for measuring such constructs as financial status, efficiency, and income. The enterprise-wide definition of income for example calls for estimates of future favorable and unfavorable events and conventions for coordinating these estimates in some kind of time pattern. At first glance this approach seems to avoid the usual problems of separable services (joint efforts) and the necessity for determining individual contributions to favorable events.

A second glance is likely to reduce optimism over the expected benefits of an overall enterprise approach. What are the rules for anticipating, estimating and especially measuring future favorable and unfavorable events? It might be possible to make such estimates without regard to the existing pile of individual resources and the necessity for replenishing and perhaps expanding the pile, but clearly estimates must be tied to manageable factors that seem to have relevance to the future

stream of events. Overall estimates of this sort may be prepared for relatively uncomplicated activities, but most businessmen probably feel a need to examine the individual agents that contribute to the future events in some way that appeals to their intuitive feeling for cause and effect and for responsibility. Thus some attention to the individual agents contributing to the stream of favorable circumstances seems to be indicated. Certainly estimates of future expenditures for an entire enterprise~~s~~ must be related somehow to the services needed to preserve the revenue stream and the services required may conveniently be related to particular sources - assets and potentials for specific kinds of service. In other words our present estimating techniques usually proceed from specific services needed to expenditures required rather than directly to expenditures back to individual services necessary to support the income stream.

Let us turn now to the problem of selecting an extremely long time interval. A long interval combined with an assumption that calls for keeping capital intact means that "basic" liabilities need never be paid, capital funds need never be returned, and "basic" assets never depreciate except in the sense that the stream of replacement expenditures is often irregular. Thus, pensions accumulated for past services under this view can be neglected as a liability except for the change in the present value of irregular outlays within the time horizon during which discounting is a material factor. Clearly discounting events in the infinitely distant future results in valuations of zero, i.e., their discounted value at any rate other than zero becomes zero. While the basic amount of liability need never be paid, it is true that a more or less continuous stream of unfavorable outpayments may be necessary, and the discounted value of this series is by no means zero. Thus, if we were to discount the expected stream of individual payments to liability holders in perpetuity at some going rate we would ordinarily have a large number, and the amount of the liability so determined would be larger as the turnover of liabilities (and therefore amount of payments) is larger. But what about the favorable effects of the services furnished by incurring new individual payables - the asset effect?

To the extent that services arise from expenditures (incurring liabilities) and the level of services remains unchanged through the years, it may be argued that the "value added" to the pool of service potential by such expenditures is at least as much as the expenditures and that they keep the value of the entire pool from deteriorating. To argue that no value has been added by expenditures to keep the expected value at the old level is to hold that the old level could be maintained without effort - a ridiculous position. Thus the series of expenditures keeps the service expectations flowing. Accountants, usually assume that the discounted increase in expected service potential is at least equal to the discounted value of the payments to liability holders. The asset valuation resulting from such procedures is then comparable to the liabilities "valued" in a similar fashion.

A digression on the much-discussed capital-revenue clearage seems appropriate at this point. This so-called principle gets around the problem of long discounting periods for assets and liability values by first establishing a level of service expectations for existing assets. (Considerable range in the size of the unit is found.) Expenditures to

maintain the service level (maintain service potential intact) are matched immediately with revenue, i.e., not shown as increasing the service potential of the organization. Expenditures that raise service expectations above this level are capitalized to the amount of the expenditure provided value added is equal to or greater than the expenditure. Capital expenditures then tend to increase the potential of the selected assemblage of assets. Revenue expenditures are those necessary to keep the environment (or some part of it) suitable for activity, and capital charges appear when such conditions are improved. The clearage is relatively clearcut when applied to total fixed assets as in the renewal depreciation method, but it is less successful when applied to individual assets.

In a similar manner payments to creditors take the form of continuous replacements. The basic amount may be viewed as contributed capital and may be treated as a part of permanent capital without maturity - a kind of permanent capital equity. Payments may in fact be divided automatically into a kind of revenue-capital division. Any temporary excess over the basic long-run amount may be considered to mature and to require repayment, while the permanent long-run base may be treated as contributed capital.

These procedures seem complicated and unrewarding to non-accountants until the consequences of alternatives are considered. A simple alternative is to estimate the total receipts and expenditures in perpetuity. If no discount factor is applied, all totals are infinite. We have no problem and in this respect the profession no longer exists. If we discount both series at some acceptable rate, our totals depend on the frequency of expenditures, e.g., the discounted value of all expenditures for an inventory level of $100,000 is much greater than a comparable figure for buildings. Nevertheless, the discounted amounts have some limited meaning in a business context. Even the estimates are not so bad as feared, because 70 years in the land of compound interest are roughly equivalent to infinity. To this accountant, at least, it seems far more simple to adopt a modified capital -- revenue approach, estimate some sort of level of services, and approach the asset problem by estimating value added or subtracted from such a base. At least the estimates take a different form. Liabilities seem to offer less urgent and important consequences. A certain amount of capital is in effect furnished by creditors whose contracts have individual due dates. A broad conception of the liability "unit" removes them from liability status for a continuing concern! A narrow view that considers each account as a liability seems to adopt an opposing view. Legal definitions aside, the scope of the unit adopted can create or destroy a "liability."[1]

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[1] Paton has argued for years that creditors furnish a part of the "permanent capital" of the business, but the problem flared anew in connection with pension liabilities and deferred taxes. See Maurice Moonitz, "Income Taxes in Financial Statements," The Accounting Review, April, 1957, pp. 175 ff. Thomas M. Hill, "Some Arguments Against the Inter-Period Allocation of Income Taxes," The Accounting Review, July, 1957, pp. 357 ff. Sidney Davidson, "Accelerated Depreciation and the Allocation of Income Taxes," The Accounting Review, April, 1958, pp. 173 ff.

The accounting difficulties that accompany the overall enterprise view are imposing, but any atomistic view encounters special difficulties of its own. That consideration of each individual asset apart from any environmental support is inadequate has long been understood by accountants and economists alike.[2] The economic concept of value-in-use as opposed to market value dates at least as far back as Adam Smith, and the accountant's going-concern value is among the more ancient of accounting conventions. Both concepts are clearly based on an organistic view of the enterprise and recognize that valuation problems must be considered in a structured environment in which the importance of relationships is dominant.

It seems that accountants have preferred to approach the income problem first by adopting the organistic view long enough to define an entity - an area of interest - and then by devising measurement conventions that apply to individual components. The valuation of individual assets is related to their "membership character" and their membership character changes in response to changes in the structure itself and in cooperating members. Classical accounting rules bring the new members into the structure at a figure representing some measure of sacrifice in terms of other members given up instead of at the greater figure representing the incremental addition to the structure's overall ability. In fact, these conventions usually insist that an individual member's carrying figure be no greater than the valuation of alternative members that might be substituted in the structure by exchanging in some sort of external market. These classical (atomistic) accounting conventions mean, of course, that the going value of the organization may be far in excess of the sum of the numbers assigned to the parts. The economic rents are neglected individually and are imputed to the organization. In this case the whole is obviously greater than the sum of its parts. The explanation requires no esoteric Hegelian logic - the accountant simply distributes (imputes) the value that way. He could,

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[2] The following discussion of the holistic-Gestalt approach reads like a defense for the accountants' "going concern value" that has gone wild. "We shall never achieve an understanding of structured totals by starting with the ingredient parts which enter into them....we shall need to understand the structure....There is then some possibility that the components themselves will be understood....the law of membership character...permit[s] no use of the conception of elements which when compounded into totals remain what they were before....The Gestaltist insists that the attributes or aspects of the component parts...are defined by their relations to the system as a whole in which they are functioning....Surely if membership character in so fundamental a sense dominates not only the locus but the very character of every ingredient, then there are no parts or elements or components, and it means nothing to say that the relations between them must be studied." Gardner Murphy, Historical Introduction to Modern Psychology (Revised ed.; New York: Harcourt, Brace & Co., Inc., 1949). Reprinted as "Gestalt and Field Theory," Readings in Philosophy of Science, ed. Philip P. Wiener (New York : Charles Scribner's Sons, 1953), pp. 210, 211, 215, 216.

just as well, have imputed the rents to individual sources, and, presto, the whole now equals the sum of its parts. This "philosophical" problem is definitional and is not likely to improve our understanding of the accounting process.

The accounting procedure devises rules for estimating services received and to be received from each component in conjunction with all other relevant components and aggregates them in some fashion for the structured entity. The interdependence of services from cooperating components means that further rules are necessary to allocate joint effort and such rules must be related to the outlook adopted for the enterprise as a whole and for cooperating facilities. Accountants have long tempered their estimate of service life for depreciable units by reference to expected maintenance and upkeep policies. It should be emphasized again that classical measurement rules were not composed to give assurance that the amounts assigned to components will always equal the number that might be assigned to the whole if a different set of measurement conventions were applied to the whole. Unfortunately, even the direct approach to valuing an organization as a whole makes indirect use of techniques appropriate for valuing components, i.e., capitalizes the aggregate expectations for individual assets, factors and products. Such valuations of the structure are highly subjective and are determined in part by considerations outside the accounting area. It should be emphasized again that the formation of rules for valuation and income for the enterprise as a whole is difficult (if not impossible) without recourse to the estimated replacement of parts and the estimated contribution of improvements. This approach requires a scheduling of replacements, and of receipts, and a discounting of the related streams. Such overall estimates involve appraisals of future management and future pressures from increasing or decreasing competition as well as estimates with respect to individual service potentials. Thus reported past demonstrated services derived from aggregation of contributions from certain constituent parts is a partial determinant of such overall valuations. Traditionally such constituent parts as managerial ability and morale are not separably valued, and their omission accounts in part for the "excess" value assigned to the organization.

The details of enterprise valuation by aggregation are worth repeating. Traditionally certain constituent parts, such as managerial skill and worker morale, are not valued separately. In fact, it is rare for an accountant even to attempt to separate revenues according to sources With few exceptions, e.g., contractual rent and interest, the revenue figures are measures of joint endeavor and joint accomplishment. Costs of keeping the environment suitable for procuring the stream of revenues are, however, partially separated. In some systems, e.g., renewal depreciation, separation is done with reluctance, but in other systems the breakdown is in some detail. Enterprise valuation is usually based on some assumption with regard to the future of these streams. Thus valuation of the concern as a whole must depend on estimates of outlays, and a detailed record of necessary past outlays would seem to be helpful if not necessary. Actually there is mutual interdependence between outlays and revenues, so that future revenues depend (in part at least) on future outlays. An attempt to reverse the mechanics is often made in budgeting, where the

procedure starts with specifying a desired stream of revenues and proceeds to estimate outlays necessary to procure it. To the extent that estimated outlays are related to individual service potentials the resulting valuation for the entity is found by partial aggregation. (The possibility that control may be exercised best when the members are considered separately is neglected here, because control may be effective even when the only check point is related to overall considerations such as enterprise profit.)

Perhaps the most clear-cut illustration of the enterprise approach to income and valuation is found in a regulated industry with an adequate and steady demand and a seasoned plant. The problem here is primarily one of programming expenditures so that the allowable deduction and profit can be recovered period by period. So long as this happy condition persists it is reasonable to insist that the firm suffers no depreciation in the sense of capital consumption that is not made good by current expenditures.[3]

The replacement (renewal) approach to the depreciation problem is based on the assumption that there is no decline in value of a well maintained complex of plant assets. For a continuing firm with an indefinite future and expected demand sufficient to make continuing in business worthwhile, a seasoned plant, viewed as a single business good, is not subject to decline in value and to depreciation.[4] Railroad managers, for example, argue either that there is no decline in value in a well-maintained roadbed or that the life of such a roadbed is so long that any periodic writeoff would be negligible.

A little reflection will show that this view rests on the assumption that the unit for depreciation is the entire plant or class of

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[3] This approach has been widely held and fiercely defended by many in the utility field. Unfortunately there has been a widespread feeling that this position is one of special interest at the expense of consumers of utility services. For a defense of the position by one who has no special self-interest see "Depreciation Accounting in Utilities," The Accounting Review, January, 1943, pp. 1-9.

[4] The restriction to "seasoned" plant is necessary because before this condition a plant does decrease in value to the extent that the wall of major replacements gets nearer. A new plant is more valuable than a seasoned one (for a continuing firm) because replacements are not so near and the interest factor cannot be neglected. If the pattern of expenditures does not yield a series of periodic income figures that appeals to users, a smoothing device in the form of replacement reserves may be applied so that the individual members of the series will yield a closer index of the longrun prospects. Notice that the smoothing device should build up when replacements are low and return to a small balance when the plant is seasoned. It does not build up to approximately one-half the cost. Ibid.

assets. If a smaller unit - say the individual rail or the annual batch of ties - is taken, decline in value becomes obvious. Depreciating individual assets on a service (or value) basis results in allowances of approximately one-half the base figure for a seasoned plant. If all plant assets are treated as a single service potential and if the plant is assumed to be a continuing service potential instead of a series of piecemeal liquidations, there is no required writedown to reflect service expiration or value decrease and therefore no depreciation on the basic facilities. The implications of this shift to a larger unit of accountability are not traced in detail at this point. Clearly these implications might have some effect on early utility rates, reported earnings during the formative period of any business, total assets, earnings related to investments, fund mobility within the firm and between the firm and the outside, taxes, and even replacement policies.

It may be worthwhile to illustrate how the income measuring process used by accountants utilizes small units and aggregates them to approximate the income for the organization. It became clear several centuries ago that the venture approach to income measurement was not adequate for indefinitely continuing concerns. By shifting the venture approach to the individual units of inventory and summing those that passed the sales (liquidation) point the resulting sum may be defined as the income for the enterprise.[5] Thus the individual inventory item becomes the unit, and the acquisition - holding - liquidation calculation is made for each such unit. Supporting rules were devised for inventory units that had not met the liquidation (sales) test, and further conventions were added for other services that obviously could not be cycled and summed in the period selected. The period costs too have a long and honorable history, and early accountants who were astute enough to shift the unit to the inventory item were astute enough to understand that the units of fixed assets will also turn over if the period is long enough. It probably seemed reasonable to break up some of the longer cycles on a straight time basis.

An interesting extension of the unit problem may be made for goodwill and such costs as research and development. If one carries the original purchased goodwill as a permanent asset and takes later promotional expenditures to expense, he is taking a broad view of this asset and is essentially advocating a replacement approach to its writeoff. The implied argument is that there is no decline in the overall value of intangible items that is not made good by current expenditures. A finer breakdown of such an account (selection of a smaller unit such as a patent) would probably lead to a systematic write-off the original item and capitalization of at least some subsequent expenditures.

Research and development may be approached through the use of projects (patents, etc.) as accountability units with systematic accumu-

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[5] See Stephen Gilman, Accounting Concepts of Profit (New York: Ronald Press Co., 1939), p. 471, and Carl Thomas Devine, Inventory Valuation and Periodic Income (New York: Ronald Press Co., 1942), pp. 9ff.

lation and write-off of project costs. If expenditures of this sort are more or less uniform and continuous, the reported profit will be approximately equal after the firm has "struck its gait" regardless of the method used. The carrying value for financial reporting may be widely different! The renewal approach to depreciation keeps the original book value intact, while the current write-off method (immediate expensing) shows no value in the financial report. Firms using the latter method tend to accumulate "hidden fat." It may be argued - not too convincingly - that all growth firms of this type need to make such expenditures to stay in business and to validate the going-concern value of their other assets. The same argument may be used to "defend" carrying the plant assets at zero amounts. Some shelter is obviously necessary to validitate the amounts for equipment, inventories, etc. The argument is therefore too general and is not convincing.

An interesting illustration of the unit problem applied to fixed assets may be drawn from an unusually cold snap in Florida. The freeze destroyed a considerable portion of the current crop and was, in fact, so severe that a number of trees and a few groves were destroyed. Some congressmen began putting the machinery into motion to have the region declared a distress area (in spite of the fact that citrus land had appreciated some 400% in value in 15 years) and tax consultants immediately began to investigate the possibilities of procuring tax deductions for their citrus-growing clients.

If one emphasizes "value of the crop," there may or may not have been a deterioration in overall value. Florida at the time was producing slightly over two-thirds of the oranges produced in the United States and foreign competition was negligible. It is well known that the demand for citrus fruits -- and most other food products -- is extremely inelastic in the regions of normal output. Thus those groves that were damaged only an average amount might be expected to yield a higher income than would have been yielded without the damage. To the extent that this inelasticity operates, no decline in value (loss) has occurred. Obviously some grove owners were worse off than they would otherwise have been, for some of the crops were entirely destroyed, and prospects for revenues were decreased. But from the viewpoint of the industry as a whole there probably was little or no decrease in value. However, in this case as always, it is the individuals who are psychological entities, and there is certainly support for using such entities as the units for calculation~~s~~ of gains and losses.

The usual accounting definition of loss is in terms of decline of prospects applied to a cost base. Thus, a decline in the future prospects of one-half is assumed to call for a write off of one-half of the cost. Let us now examine the damaged crops in terms of cost expiration. The conclusions are somewhat similar. From the view of the entire industry as a unit there is no deterioration of value (revenue-getting prospects) if the demand is sufficiently inelastic. If there is no deterioration of benefits or services expected, there is no case for taking a loss by a writedown of cost. For those owners whose damage was so great that the demand elasticity would not compensate fully, there was a decline in prospects, so that the anticipated benefit level was reduced and a loss recognition for the individual was in order. Notice, however, that the

anticipated benefit level for the long pull (over a long unit of time) may have considered a few cropless years so that the longrun level of expected benefits was not lowered by the current damage even in the individual cases. If so, there has been no decrease in value -- a subjective phenomena -- no decrease in expected benefits and therefore no signal for a writedown of cost. Again it should be observed that from the point of view of the entire industry as the unit of accountability, there may be no decline of even shortrun dollar-getting possibilities, and therefore no reason to recognize a loss. The gains in value of the output for some groves may have more than offset the loss in value for others.[6] At the other extreme it is possible to use each tree as the accounting unit (or each orange) and report - in good faith - tremendous losses for individuals and for the industry.

An extension of the unit problem is also found in the oil industry, where it is common to find dry holes that in themselves as individual units are of negligible benefit to anyone. Accountants for tax and reporting purposes have long been accustomed to adding the cost of a normal amount of dry holes to the cost of the producing wells. Looked at from the point of view of the individual drilling effort the cost is a clearcut loss! However, if the unit is enlarged to the entire operations of a firm, the same costs may be construed as an asset! Certainly the line between loss -- capital reduction -- and asset is thin and shifting. So long as a firm can keep from being submarginal, the selling price of the output of the producing wells should be higher enough to cover at least some (marginal) exploration costs. By selecting certain imputation techniques some exploratory costs are recoverable and by definition are not losses at all. It seems evident that a wildcatter with funds for only one effort would be required to write off the cost of the single dry hole as an immediate loss. Suppose, however, that he has numerous risky endeavors and we accept his total activity as the accountability unit. There is a case for adding the cost of unfortunate activities to the cost of more fortunate ones so long as the total prospects have not decreased. It is even possible to argue that a longer time unit should be employed so that, with a reasonable longrun probability of ultimate success, we might take a man's lifetime of activity as the unit and hold that his future prospects are little changed by this particular failure and that his report should not reflect a loss. Most accountants would probably agree that the universe and eternity are too large to be used successfully as accounting units, but a man-for-a-

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[6] The Internal Revenue Service has taken a curious attitude toward such cases and its meaning is difficult to determine. In 1943 the Bureau took the position that in storm damage the land and improvement should be taken as a unit for loss determination and that no separate basis should be attached to trees and shrubbery. (30 BTA 1028). In 1955 it was held that for damage due to a freeze, land and trees could not be taken as a unit for determining the amount of loss. Among other things it was held that the land deteriorated in value due to the presence of the dead trees (Bessie Knapp et al., 23 TC 716). Apparently the authorities became so involved in value imputation to types of assets that they missed some of the related problems.

lifetime is a psychological unit for whom reports of accomplishment and status may be useful.

In the field of accounting a familiar area of indecision arises in connection with inventories. Suppose to illustrate that a few units of merchandise have been damaged so that they must be sold for scrap or given to charity. Meanwhile the sales possibilities of the remainder of the stock have increased so that the value - revenue getting possibilities - of the entire inventory has not declined. Is there need for loss recognition? If the stock were liquidated, the reported net income would report the algebraic total of the adverse and favorable circumstances. Shall we let this possibility influence our attitude toward loss and the units to be selected for an inventory that is not liquidated? The selection of the inventory unit clearly influences the income reported with cost or market and with the retail method designed to simulate cost or market. Moreover, the unit problem is encountered at the beginning of any discussion of base stock or LIFO. LIFO defenders have emphasized for decades that the identified - unit approach implies piecemeal liquidation of arbitrary or conventional inventory units to which the costs are said to attach.

It should be clear that the major changes in income that results from varying the size of the unit arise because of the differences in requirements for recognizing gains and losses. If cost or market is applied to individual units, the increased prospects of those items that increased in value is not offset against the decreased prospects of those items that have suffered a decline. Thus the prospects for the entire stock may have increased while accountants who follow item-by-item cost or market stubbornly insist on the recognition of an inventory loss in the form of a writedown to market and at the same time insist on more rigid tests for recognizing gains. They find the evidence adequate to support a loss but not sufficient to support recognition of gain.

Application of cost or market to the entire stock of goods permits the offsetting of individual value increases against decreases, and so long as the value of the entire inventory asset has not decreased no inventory loss is taken. Only the area covered in appraising the prospects has been changed - the unit to be measured has been shifted - yet in the one case a loss is indicated and in the other case status has been maintained. If the rules for both loss and gain recognition were identical, it would be a matter of indifference whether cost or market is applied to individual units, classes of stock or to the entire inventory. If the unit is widened until it coincides with the firm itself, no amount of damaged stock, receivables, buildings etc., whether from fires or any other reason would result in a loss so long as the total prospects of the firm have not decreased.[7]

The unit controversy is also a part of any discussion about the desirability of burying inventory losses in merchandise cost of sales. If the inventory process is thought of as a method for the assignment of cost of goods available for sale to revenues and to future periods, the pool of costs may be assumed to be one unit, and the declines in value

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[7] The propensity of accountants for using more rigid rules for

of the unsold units may be combined with the obvious decline in utility of those that were sold. A separation of the two elements may be considered to be desirable because of the evidentiary difference, but there is certainly no serious objection to the assumption of the broad unit of income accountability. Accountants sometimes insist that value declines on units unsold should not be combined with the cost of units that were in fact sold. If so, they are insisting on the use of the individual item of inventory as the accounting unit. Of course, there are all kinds of differences between units that are on hand and those that have been sold, but we are interested primarily in these value changes. A unit may lose value long before it is sold. Accountants may wish to give recognition in some manner to decline in value due to sale and due to other considerations. Thus it may seem to be desirable to separate the cost of goods available into two or more portions.[8]

The problem of shrinkage loss (loss from lost units) is seldom discussed adequately in cost accounting textbooks, and the reader may not have realized that the unit problem is a major consideration in this area. If one of the requisites for an asset is that some services or benefits must be expected (all accountants seem to be in agreement here), then it would be difficult to explain to a judge or jury why accountants are willing to add the cost of normal number of lost units to the cost of good units. Clearly there are no benefits in a literal (direct) sense to be expected from the physical units actually lost. If the unit of accountability for benefit and loss is the individual pound, gallon or other measure, a defense for the capitalizing of such costs by their addition to saleable units is therefore difficult to construct. (It is doubly difficult to defend by those who prefer animistic "embodiment" in physical units.) If the unit of accountability for gain and loss recognition is taken to be the entire production, the defense is straight forward, plausible and even convincing. If the shrinkage is normal the expected value or revenue-getting possibilities of the entire output is

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recognition of gains than for recognition of losses introduces lags in the broad enterprise reporting of income as discounted prospective receipts. The discounted stream of value declines would be larger due to the rules for speedy recognition of losses. The discounted value of receipts would be smaller due to the accountants' reluctan~~t~~ce to recognize them. It is therefore necessary for one who discounts to separate these two streams or to change the traditional accounting approach.

[8] The pool approach as opposed to the unit approach has had staunch defenders and foes. For a friendly approach that considers the utility of the entire stock of goods see: William Morse Cole, Accounts, Their Construction and Interpretation (New York: Houghton Mifflin Co., 1915), pp. 118-120. For the views of a fierce foe see: George R. Husband, "The First-In, Last-Out Method of Inventory Valuation," The Accounting Review, June, 1940, pp. 190-196. In general those who feel that costs somehow attach and adhere to physical things tend to be foes of the broad approach, e.g., Paton, Woodbridge. The present writer has long been reasonably sympathetic to the pool and utility-of-the-group approach. See: Inventory Valuation and Periodic Income, op. cit., p. 15 and the citation in note #3 of this essay.

not decreased by the lossage, and therefore no write off is indicated. Presumably the forces of competition will mean that (in the longrun at least) the selling price of the good units will be high enough to cover normal shrinkage, and accountants have in this case apparently agreed to use the entire output as the costing unit for loss determination and to redistribute the cost to smaller units for inventory purposes. If the losses are abnormal, the assumption is apparently that such losses are not recoverable, i.e., that the value increase on the good units is not sufficient to cover the loss of potential in the units lost. In this case not even the selection of the entire output as the unit will be able to conceal the deterioration in value.

What conclusions may be made in regard to the selection of units for measurement? Are accountants hopelessly inconsistent because they do not select a uniform unit and stick with it? Is there help from related fields and disciplines? Which units should be adopted? The answers here, as elsewhere in accounting, are not very satisfying. We select the units that yield the greatest benefit to worthy users and are amenable to classification and measurement. In many cases the individual stock of inventory or the individual plant asset is the most useful unit for control against theft, for control of maintenance and upkeep. For income calculations the appropriate unit would seem to be the larger alternative - even the firm itself - if measurement can be applied directly and not found by aggregating smaller units. For liqudity purposes the unit may be fairly large. (Usually the firm may be influenced by legal relationships not appropriate in other connections.) The claims may operate against individual assets or sometimes against more than one accounting entity. We may need to look longer and harder at the parties at interest, their areas of decisions, their reaction patterns, and their needs. This kind of scrutiny combined with knowledge of our measurement limitations may lead to a more useful profession.

Digression on the Organic View of Organizations

There is a theory of organizations, prevalent in Europe and among some organization theorists elsewhere, that tends to impute a separate will to the organization in the form of intentions, drives, and objectives. This view is often connected with the worn-out cliche to the effect that the whole is greater than the sum of its parts, and is probably an offshoot of the Hegelian doctrine of "world view" -- the "absolute idea."[9] In some mysterious way an organization such as the

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[9] "On his Hegel's view the universe is not unlike an animate being that has a soul, desires, aims, intentions, and goals. The universe is spiritual; it has direction; and the explanation of ordinary facts, human actions, historical changes, and institutions may be grasped once we recognize how they are embedded in this cosmic organism..." Morton White, The Age of Analysis (New York: New American Library, 1955), pp. 13-14. White also points out some similarities of

Notre Dame football team becomes endowed with a will of its own and with intentions and goals and the other paraphernalia usually attributed to individuals. To the extent that an organization develops any group solidarity, it is said to have some sort of quality that is over and above the qualities of the individuals. There is little doubt that this view is a reversion to primitive anthropomorphism with the equivalent of minor gods who inhabit each organization and presumably account for the excess "will" that results from the association of individual wills. Nevertheless, this view is widely held, and its basis may be worth reviewing.

The example most commonly cited to illustrate and explain the excess of group will (spirit) is the case of mob psychology. The scientific view is not quite so mysterious, or romantic, or so irresponsible. Individuals act differently in different situations and under different pressures. This conclusion is based on simple observation. Under the stress of hunger, the sex urge, companionship of friends, antagonism of enemies, individuals may be expected to exhibit different reactions and to move in different ways. Variations in behavior from some sort of norm need not be imputed to the mob and not to the individuals. An extension of this sort of imputation would impute behavior to sex and to hunger instead of to human decision centers acting under stresses of passion and lack of food. Therefore, when a group of individuals are together in a mob and are incited by leaders in specific ways, there should be no reason to expect that each individual~~s~~ should continue to act as if conditions were different and he were alone. To expect such a result is to deny the relevancy of environment in predicting behavior. In organized society a number of individuals often carry on limited activities and enjoy emotional outlet through, by means of, and around an organization. With regard to athletic teams, some die a thousand deaths when their team loses, and roughly an equal number expire when it wins. Such artificial crises on Saturday afternoon are attractive to many individuals, and by becoming emotionally attached to a particular group the lives of many individuals are drastically changed. An executive of Chrysler feels identification with and responsibility for an entirely different group of individuals than a corresponding executive of General Motors. (The recent, lamentable rise of nationalistic identification is a more dramatic and unhappy example.) The inference that there is an excess "will" with different objectives from those of the individuals is related to metaphysical things-in-themselves, is animistic, is gratuitous, and is not necessary. If all individuals were stricken from the earth, the wills of many organizations would doubtless need considerable

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Hegel's views with those of John Dewey. "Under the influence of Darwin and James he [Dewey] transformed the antitheses of the Hegelian dialectic into the tensions of a biologically rooted and socially enveloped 'problematic situation.'" Ibid., p. 175. The specific cliche about the whole and its parts is probably taken from the Cantorian definition of infinite numbers - long a favorite topic of mystical discussion and wonder.

revision, and if all except one individual were stricken, his behavior patterns would certainly be due for a rapid change.

We ask: how then can scientists reconcile their teleological, goal-seeking approach in biology and psychology with a non-holistic approach generally? Actually, no reconciliation is necessary. Scientists may study changes in individual behavior in response to all sorts of excitations without finding it necessary to impute goals and objectives to the state, the church, the corporation, the mob, the sex drive or the aged. Scientists try to determine the reacting entity by observation and by deductive methods. The function~~s~~ of stomach, for example, is studied in relation to its contribution to the body, and the scientist tries to study the clues and messages that excite it to action. So far as we know, however, the stomach has no independent will over and above its physical and chemical components, and no such assumption is necessary. Nor is it necessary to impute a part of the stomach's observed reaction to the will of a larger unit -- the human being. The evidence supports a relational hypothesis - nothing more.

In the field of accounting Limperg and other Dutch and German accountants emphasize the social function that results from society's need for dependable information. This function is filled by public accountants, and it is argued that the accounting profession has as its purpose the objective of performing this function. Scientifically the explanation and verification becomes more manageable if one takes the opposing view that individuals have information needs (that are observable) and that other individuals try to fulfill these needs. In order to fulfill these needs more effectively they sometimes band together and form professional organizations. Moreover, individuals within the organization often permit other individuals of the organization to exert influence over them in numerous ways.

Perhaps the argument can be supported along other lines. Man seems to place himself at the center of willful activity, and he may therefore tend to picture an organization in his own image. No one doubts the influence of organizations and institutions (and other environmental conditions) on the behavior of individuals. No one doubts that certain individuals can help manipulate other individuals by means of all sorts of arrangements. This mutual feedback is a fundamental doctrine of the sociology of knowledge. These points are capable of being researched. Moreover, in a given sociological setting science can study the influence of many sorts of organizations on many kinds of individuals.

It is the conclusion that the term "organizational goals" is a rank example of reification at its worst and should be avoided. (Unfortunately the expression is convenient to use and often simplifies otherwise complicated rhetoric.) To hold that an organization -- like an institution -- is an arrangement of individuals having certain stability features is not to deny that organization theory may be useful or that organizations may be used as instruments for the control of individuals. The wills and desires of individuals in stable social organizations may be modified so that all individuals are partially satisfied.

This melting-pot operation is a proper and important object of scientific study and is the basis for the type of accounting "entity" used throughout these essays.

THE DOCTRINE OF MANAGEMENT INTENT

The extent to which management intention is a determining factor in setting asset valuations, classification and income measurement has received little systematic discussion and seems to merit more extensive inquiry. The present paper is a start in what is hoped to be this desirable direction. There is little doubt that expressions of managerial intention are pieces of evidence that must be weighed by independent accountants, for they are clearly partial determinants of valuation and income measurement. The following quotation states the position of the typical accountant and indicates the influence of intention in the field of business measurement:

> Costs need only to accounted for in accordance with the intention governing their incurrence (or subsequently modified intention)... From the viewpoint of intent the costs of items on hand are properly to be exhibited as assets since they represent the costs of items which are to be disposed of in the future -- either voluntarily or in liquidation -- for the purpose of acquiring profit. The costs of items disposed of are properly treated as revenues or liquidation costs since upon disposal intent reaches the end of the road.[1]

As all readers undoubtedly know, public accountants render opinions on management's representations. Clearly management representations include statements of its intentions in numerous directions. The problem for auditors is not whether they should give opinions on management's plans (intentions), for they have long been doing so. The problem that requires attention is to find what evidence is necessary before the auditor feels free to give such an opinion and what weight should be attached to management's own statements of its intention.[2]

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[1] George R. Husband, "The Entity Concept in Accounting," The Accounting Review, October, 1954, p. 552.

[2] The going-concern assumption illustrates our confusion. It is one of the duties of the independent accountant to determine whether a going-concern assumption or a liquidation assumption (or some other premise) best fits the probabilities and to modify his measurement methods to suit his conclusions. It is true that the going-concern premise is appropriate in many situations and consequently the measuring procedures for such a premise are called for. However, there is no reason for accountants to assume away and neglect the possibility of liquidation by adherence to some pseudo principle that is erroneously considered to be fundamental. Maurice Moonitz uses the German-Dutch term "continuity" in Basic Postulates of Accounting (New York: American Institute of Certified Public Accountants, 1961). See also The Journal of Accountancy, November 1961, p. 72.

The problem reduces to the task of finding suitable rules for determining tenacity of purpose - the stability of plans - and for determining the truthfulness of reports regarding these plans. In some cases it may be feasible to appraise the stability of the objectives themselves and then to appraise separately the possibility of changes in the plans (means). If, further, the client is "adaptive" and adjusts quickly to changes in his environment, we may have less confidence in his current intentions than if his flexibility were more limited. These suggestions are very general. What exactly are the criteria for determining tenacity of intentions? Can we construct an index of stability? What sort of training is available to improve our appraising techniques? How can we weigh the shifting strength of the numerous outside influences that may operate to change intentions? How can we appraise the truthfulness of representations about intentions? If there should be deviations from truthful reporting, in which direction would the influence of self-interest tend to drive them?

At first glance it appears strange that an independent group would risk its professional standing by attempting to weigh probabilities and issue formal -- expert -- opinions on management's plans. A little reflection, however, indicates that in many cases the problem is not difficult. Often the evidences of intention are more than adequate. Legal documents and agreements may attest to management's plans. Examples are numerous; sinking fund agreements, stock option deals, purchase commitments, contracts with selling agents, construction contracts awarded, dividend declarations, articles of incorporation are only a few of the more obvious forms of evidence. In these cases the problem reduces to one of establishing the authenticity of the agreements and correlating the intentions which the documentary evidence seems to imply. Clearly the ease of changing intentions is not entirely related to legal enforceability. For example, the firm may be so far committed by expenditures and other cost or profit considerations that major changes in plans (intentions) are highly improbable.

The accountant may assume that intelligent management will intend to do those things that further its own interest, but he can never know exactly what management considers its own best interest, and he may sometimes question its intelligence. The "best interest" of management may of course not coincide with the best interests of any other group, but in most cases the traditions and standards of stewardship and fiduciary relationships influence management and help harmonize its own interests with those of the shareholders and other groups to whom management is responsible. In an enterprise economy in which each person is supposed to be motivated by what he believes to be his own self interest, management finds that its own interest is usually furthered by paying some heed to the objectives of all other interested groups. Nevertheless, with the separation of ownership and control and the currently ill-defined lines of responsibility management objectives may at specific times seem inconsistent if not beyond understanding. Maximizing retained earnings through a reduction of distributions to owners (dividends) may sometimes be an important consideration. Solvency consideration when creditors are aggressive may be more important than immediate profits, and keeping maximum losses within acceptable bounds may appear to be a stronger objective than higher overall profits.

The problem is further complicated by the possibility that even if the overall intentions of management were known, there still would be intentions on individual items or policies that obviously do not square with the overall objectives. How is the independent accountant~~s~~ to resolve these possible inconsistencies? Clearly he should take notice of the inconsistencies and must render his opinion based on his judgment of probabilities. Management's immediate goals may be inconsistent with one another and with longrun goals, and, worse, they may not be consistent with objectives of creditors, government agencies, owners or other outside interests. Morever, there is always the possibility that the representations do not agree with the intentions. Clearly the possibility of divergences of this kind cannot be neglected. Accountants must have adequate knowledge of the pressures that bring about such disparities and the directions in which self-interest and ego-building pressures operate.

Apparently, the independent accountant must examine the stated intentions of management in light of its own goals and also in light of the goals of outside groups with significant coercive powers. It is with the needs of both inside and outside groups that so-called accounting principles have developed. Management intent is often modified, if not actually formed and molded, by the desires and needs of outside interests who have a stake in the outcome of the affairs of the concern. To the extent that accounting conventions express the requirements necessary for reporting significant information to these outsiders, it is clear that the accounting conventions themselves become coercive restraints on at least some of management's actions and intentions. Therefore, it seems that a primary duty of independent accountants is to examine actions and intentions of management in light of the outside needs (and restrictions) and to insist on reporting only intentions that are consistent with (not contradictory to) the common goals of all groups. This position goes counter to the once-prevalent attitude that the accountant is supposed to report on where the firm has been and not on where it is going. The older attitude has never been defensible, because, first, the information about the past is accumulated to aid in making decisions affecting the future and, second, one usually cannot measure the results of past operations without making some assumptions about the future.

We may now review some of the procedures and guideposts that are available for appraising intentions. In most cases the auditor~~s~~ places some reliance on tradition -- past management behavior. It is probably safe to say that both individual and collective human behavior, in some respects at least, tends to follow patterns -- known trails -- and therefore the distribution may be predicted with varying degrees of confidence. Whether the typical training for public accountants includes enough statistical and behavioral training to make him competent in this direction is extremely doubtful, but in limited cases a study of an individual's past behavior may permit the auditor to express his qualified opinions in areas not supported by formalized agreements that are subject to direct verification.

Let us now turn to some specific aspects of accounting that are currently influenced by intent. The field of strongest influence is that of classification, but intent may also be important in asset valuation (income measurement). First, consider the extreme possibility that

intent can "create" an asset or an equity.

Perhaps the most notorious and questionable case of asset creation by intent is that of reacquired shares. In at least some instances accountants have held that treasury stock (and perhaps bonds) which according to intention soon will be converted into cash or used to reduce liabilities or to acquire services can be classed as a current asset.[3] To illustrate the position assume that $10,000 each month is to be deducted from wages for employee stock acquisitions by construction workers. Suppose also that the concern buys for $100,000 sufficient treasury stock so that delivery of stock can be made according to contract. There is no doubt about the validity of the charge to construction cost, and the concern, apparently in good faith, has a bona fide cost to the extent of $100,000. It is argued therefore that the cost of the reacquired shares is an asset in the sense that the cost of services in the physical form of building, machinery, inventories, etc., are assets. Intention is therefore said to govern the treatment of treasury stock as an asset or an equity deduction, for, if the intention is to retire the reacquired stock, these accountants ordinarily do not wish to show the expenditure as an asset.

This kind of argument is extremely common in accounting, and the reader must be aware of the semantic implications of truth by definition and assertion. The class of assets obviously includes what interested parties wish it to include. The inclusion or exclusion of a particular item is a matter of agreement, and the agreement should normally imply that the results of the classification are considered by the profession to be more useful than alternative possibilities. (It is of course possible - at least for short periods - for the agreement to be based on superstition, ignorance, inertia or tradition.)

The point to be emphasized is that intent is evidenced by both contracts and expenditures, and some accountants feel that the definition of asset should cover the service potential generated by the combination of stock and agreements. A small number wish to broaden the definition of asset to include unissued stock, but the majority is so overwhelming that to include unissued stocks or bonds as assets is no longer acceptable classification. Suppose however that a contract has been completed for the construction of a warehouse (the contract is evidence of intent), and that payment is to be made by issuing previously unissued stock or bonds. In the interim should the accountant include the required amount of unissued stock as an asset? The answer here is again definitional. If one insists on cost as a requirement for entry into the asset classifi-

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[3] For example, see: American Institute of Accountants, CPA Handbook (New York: American Institute of Accountants, 1952), Chapter 18, p. 12.

Fortunately there are many accountants who disagree. For example: W.A. Paton and W. A. Paton, Jr., Corporation Accounts and Statements (New York: The Macmillan Company, 1955), pp. 422-423. Roy B. Kester, Advanced Accounting (New York: Ronald Press Company, 1946), pp. 234-235.

fication, he must define cost to include sacrifice brought about by sharing future prospects. Accountants may wish to abandon entirely the definitional requirement of cost or to reinterpret the meaning of cost. It should be observed that the original cash raised by the sale of stock may be considered to be a cost in the sense that the rights to future prospects are rearranged and shared.[4]

A related problem of asset creation by intent arises in the treatment of subscriptions receivable from the sale of capital stock. Accountants are in considerable disagreement as to whether the claims are assets or deductions from the amount of the ultimate permanent equity. To a non-theorist the question is simple: do we have an asset or don't we? More definitions and too eager! A number of accountants prefer to meet the question by reference to intent. If management intends to collect the unpaid balances, it is asserted that the balances are assets. If, on the other hand, management intends to let the balances ride, it is argued that the equity should be reduced. These accountants, therefore, permit asset creation or destruction by short-term intention even though intention may be quickly changed, and its relevance is doubtful.

It is interesting to note that some important intentions even when evidenced by legal contracts are sometimes not recognized in the accounting reports. Mutually unperformed contracts, e.g., a contract for the construction of a warehouse, may involve material sums and the intent may be unquestioned, but traditionally accountants have felt little compulsion to show the building to be constructed as an asset and the liability for future construction as a liability. Only recently have some accountants insisted that such items even be disclosed. It seems obvious that shifting of material amounts from the working-capital section to long-term assets should call for disclosure if the usual implications of a "statement of financial condition" are to be taken seriously.

Suppose for another example, that the manager intends to borrow money for a business on his personal note given to a member of his family. Is an asset created by his unmistakable intent? A negative answer is rendered by the profession even though evidence of his intent may be adequate to establish a strong probability. A further question is in order: is disclosure of this material financial opinion necessary if the evidence to support intent is adequate? To change the example, suppose that management intends to declare a dividend as soon as it can meet the formalities of having the board give rubber-stamp approval. Assuming that the evi-

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[4] The "sacrifice" in raising cash by sales of stock is not always clear. Who, for example, makes the sacrifice? The new investment is presumed to yield more than its cost, so the old owners are in effect getting a share of the new rents, and the sales price of the stock presumably reflects sharing of old rents with the new owners. Notice that this whole argument takes the viewpoint that the entity for which sacrifice is measured is composed of existing equity holders. An interesting collateral question is: How does a steward operating under "assets equal responsibilities" ever incur a cost in the sense of sacrifice? Is his sacrifice in the form of added responsibilities?

dence of intent is satisfactory, is a liability established? The profession's answer again is generally in the negative, for liabilities shown on the statement of financial position are still tied closely (perhaps too closely) to the concept of legal obligation and partly divorced from the concept of probable demand on funds. A definition in terms of the latter may be more useful for guidance than the more conventional definition.

At the present time it seems fair to say that intention unless supported by agreements enforceable at law (or perhaps by strong custom and usages) seldom supports the formation of an asset or the creation of a liability. Intention plays a much more important role in asset writedown and liability cancellation.

Intention and Measurement. Without doubt intention has long been an influential factor in the measurement of cost expiration and asset valuation. Seldom are fixed assets used until they have no value other than scrap. For prestige purposes a florist for example may follow a policy of trading his delivery vehicles each year. Clearly the depreciation and maintenance rates are affected by such plans (intentions), and it is interesting to note that auditors do not call for special or unusual evidence to support such implied or stated intentions. If the client has been in business for some time, his present intention may be inferred from his past actions, and if he is a newcomer in the business, the actions of others in similar lines of business along with a statement of interest from the client may create an inference strong enough to support the writeoff.

Intention is a factor in general writedowns to scrap when a fixed asset is to be taken out of service. In some instances the auditor may wish to wait until the asset is in fact removed from service, but to adopt such a rule is to insist that a mistake resulting in a loss cannot be recognized until removal from service by junking or sale.

Intent also plays a role in both the definition and valuation of inventories. In the retail field intent to markup or markdown is considered to be hardly sufficient, but as soon as management gives tangible expression to its intentions by changing the retail tag the accountant accepts the evidence and changes his valuation accordingly. In cost or market, whichever is lower, it is assumed that a decline in replacement cost leads to an automatic and unavoidable intention to reduce the selling price. When goods are damaged, obsolete or otherwise unsalable at regular prices, a cut is often highly probable and the intention to reduce the price in order to move the goods is usually inferred from the physical evidence.

Intent and Account Classification. There is little doubt that the modern controversy over the place of management intent in accounting is concerned chiefly with classification for statements of condition and earnings. It must not be supposed, however, that intent is the only factor that helps to determine classification, and according to some accountants it should be considered to be a relatively minor one. It may be assumed that the primary (and perhaps the only) purpose of the current classification is to provide the reader with a crude guidepost to the short-term debt-paying ability of the concern. The classification has

been widely used for this purpose and the division between current on the one hand and all other assets on the other has received more attention than other items of the financial statements. Many accountants hold that management's intent is close to being irrelevant if the debt-paying ability of the firm is not strong. This group argues that the creditors are in a position to change the plans of management and that the current classification should be in terms of assets that *could* be turned into cash within the appropriate period. If conditions are very bad, the possibility for conversion without interfering with the continued operations of the business may be abandoned and replaced with prospects in liquidation. However, except in extreme cases creditors are usually interested in what items and amounts can be used to meet obligations without liquidation of the concern.[5] The accountant, in such cases, is well advised to look to the creditors for his clues about management's intention.

This viewpoint may be valid if the firm is in a tight working-capital position, but what if the concern is well situated in this regard? In this case creditors may be interested in the current position of the firm *after* deduction for the financial needs of major improvements or capital expenditures to carry out other managerial plans, Thus, if the debt-paying prospects of a firm are favorable, it may be argued that creditors are better informed if the back load of government securities that are temporarily holding funds for plant expansion were not shown as current. Such placement of the bonds would serve to put the public on notice of management's intention to convert the proceeds to fixed assets. In these cases a shift of relative power means that creditors are less important factors for determining plans.

We must not forget that short-term creditors are not the only parties interested in the short-term debt-paying ability of a concern and therefore influence management's intent in this area. Long-term creditors become vitally interested if the position of the firm is deteriorating, and owners are usually aware that their future dividends depend in part upon management's ability to manage the firm's working capital. Also, it must not be forgotten that the managers themselves are interested in maintaining control, and their stated intentions with regard to liquidity problems and classification may be tested by referring to the direction of their interest. It seems therefore that an investment in land for speculation would appear to be more current as the liquidity position

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[5] Notice that the working-capital concept is based on the assumption of a continuing concern. If it were not, a statement of affairs with all assets marshalled for their debt-paying ability in liquidation would be in order. From the going-concern viewpoint a two-to-one ratio might be considered to be adequate because it is a margin that might be reduced for maturing debts *without interfering* with the operations of the business and not because such a ratio is a sufficient margin to provide for liquidation losses and leave enough to take care of the current liabilities. See Carl T. Devine, *Inventory Valuation and Periodic Income* (New York: Ronald Press Company, 1942), pp. 25-27.

deteriorates, for the strength of managements' intention to employ it as a current asset would correspondingly increase. In this case the inferred evidence to support intention would be in harmony with those who insist that it is creditors' intentions that are dominant.

Many accountants conclude that owners and managers themselves (along with creditors and prospective creditors) should benefit by having the current assets include only those assets that can be used for short-term debt-paying without interfering with management's major plans and intentions. Perhaps a dual current-asset division would be desirable to show the amount available if present plans are carried out and also to show the amount that could be available if creditors seriously curtailed management's current intentions. Consider some statements by practicing accountants on this aspect of the problem.

Blough feels that assets that have been or are to be dedicated to a planned program should be disclosed.[6] Wehr discusses some methods of disclosure: (1) If intentions do not impair normal liquid requirements a note in the President's letter is sufficient; (2) an appropriation of assets to be placed among other assets and a "reserve" below current liabilities; (3) parenthetical note to work in process or fixed assets; (4) the less desirable showing of a restriction of retained earnings.[7] Bliss is an early advocate of pulling cash arising from the sale of fixed assets from the current section if management follows the policy of segregating such monies for reinvestment.[8] He does not seem to be concerned with monies that may be from other sources and still be "intentionally segregated." Foulke points out that cash earmarked for specific purposes should be separated from unrestricted cash.[9]

Apparently the profession is strong in its inclination to show as working capital cash available after carrying out current plans, but it is interesting to note that arguments in support of this position are, for practical purposes, omitted.[10]

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[6] Carmen G. Blough, "Earmarking of Funds Dedicated to Fixed Asset Expansion," The Journal of Accountancy, April, 1948, pp. 345-346.

[7] P. N. Wehr Jr., "Accountant's Responsibility for Disclosure of Fixed-Asset Commitments," The Journal of Accountancy, September, 1951, pp. 322-325.

[8] James H. Bliss, Management Through Accounts (New York: Ronald Press Company, 1924), p. 166.

[9] Roy A. Foulke, Practical Financial Statement Analysis (New York: McGraw-Hill Book Company, Inc., 1953), p. 72. A similar position is expressed by B. Bernard Greidinger, Preparation and Certification of Financial Statements (New York: Ronald Press Company, 1950), pp. 21-22.

[10] A related problem is interesting. A certain (minimum ?) amount of cash is usually not available for paying existing debts if the concern is a continuing one. Here, it seems, is clearcut restriction on intent. According to Peloubet, this cash "can no more be distributed than can the land

Classification of marketable securities in practice has always been influenced to some extent by management intent. The profession is now in substantial agreement that current assets should include those assets which in the ordinary course of business will be turned into cash within a specified period plus those assets that could be turned into cash within the period without interfering with the operations of the business. The tests for current inclusion with regard to securities (and perhaps with some standby assets) are: (1) that the asset can be disposed of without interrupting operations of the business and (2) that the firm must have a high probability of being able to dispose of it, i.e., a ready market or smoothly functioning marketing mechanism. The latter requirement for the existence of marketing machinery recognizes that the firm's outlets for selling its regular merchandise may not be able to move securities or other unusual items without outside selling help.

Nevertheless a number of accountants still feel that management intent with regard to the investment classification is a determining factor and that there is little reason for insisting that "expansion money" invested temporarily in government bonds be shown as a current asset. The latter position enjoys some authoritative support. For example, Kester feels that intent is the most important criterion and that classification as current is proper only if it is intended to reconvert to working capital within the near future.[11] Paton states: "Likewise cash funds on hand but dedicated to construction or other non-current purposes should in general be excluded from the current classification."[12]

Intention seems to have less influence in the arrangement of the earnings report, although it influences the reported profit to the extent that it aids in establishing asset valuations. There are, however, a number of areas of income classification that may be influenced and modified by intent. The earmarking of unassigned profits in the form of restrictions or appropriations is, of course, an expression of the intent of appropriate directors or officers. We are faced here again with the need for inferring actual intent and using the inference to support an opinion about the directors' representations. The auditor may have confidence in his

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on which a plant is built." Maurice E. Peloubet, Correspondence, The Journal of Accountancy, October, 1932, p. 310. Woodbridge feels that change funds are as fixed as the registers in which they are contained and subscribes to the view that: "Such amounts (of cash) should no longer be carried as current assets, for it is no longer the intention of the management to use such funds to meet the current debt as shown in the current liability section of the balance sheet." Frederick Wells Woodbridge, Accounting Basic Concepts (Accounts - Propietorship Analysis) (Dubuque, Iowa: Wm. C. Brown, 1948), p.38.

[11] Kester, op. cit., p. 208. For a concurring opinion written some time ago see: Anson Herrick, "What Should be Included in Current Assets," The Journal of Accountancy, January, 1932, pp. 51-62. See also correspondence from Herrick in the Journal of November, 1932, pp.388-390.

[12] W. A. Paton, Essentials of Accounting (New York: The Macmillan Company, 1938), p. 787.

opinion about restrictions for bond retirement and similar objectives if the restrictions are contractual or are obviously necessary. He may find it more difficult to appraise restriction for expansion, modernization, etc., but even here some opinion should be possible. Management's objectives are seldom completely obscure and individual representations can usually be judged on the basis of their consistency with probable objectives or "usual" objectives of persons in similar positions.

The problem is certainly complicated by the possibility that specific individual intentions of management may not square with the overall objectives of management or other parties in the organization. How is the independent accountant to resolve these possible inconsistencies? This problem of judging the adaptability of specific actions (means) to objectives (ends) is a fundamental problem in business administration and is not peculiar to the field of accounting. The independent accountant must render opinions in this area, and the need for a careful and intensive study of business organization and behavioral science should be obvious. The auditor should be aware of the needs of all groups and the pressures that operate on management. In the midst of getting detailed information he should observe the business environment, the peculiarities of its operation and the behavioral reactions of its managers. To the extent that accounting conventions and rules express the requirements necessary for reporting significant information to outsiders and to members of the management hierarchy it is clear that the accounting and auditing conventions themselves become coercive restraints on some of management's actions and intentions. A primary duty of the accounting profession therefore is to examine actions and intentions of management in light of these pressures and needs, to devise procedures that will isolate inconsistent actions and statements, and to coerce acceptable action by rendering positive opinions only on representations that are clearly consistent with enterprise objectives.

INCOME AND THE CASE FOR CURRENT COSTS

It is the purpose of this essay to examine the concept of income and to appraise its relevance to the current problems of economic organization and management. The following observations may be summarized.

1. There are several economic uses to which income measurements may be put, but resource allocation and combination to economize sacrifice are taken as the most important.
2. The statement that sunk costs are irrelevant to economic decision does not imply that all kinds of costs of existing facilities are immaterial, should be treated as free goods and therefore should not be economized.
3. Income as a master stewardship report is far from being ideal, but with modifications it may prove useful.
4. Current costs appear to satisfy the resource-allocation and stewardship functions better than other forms of cost.

Seldom can a discussion be confined entirely within the limits of a single discipline. In accounting, for example, materials from the related fields of psychology, engineering, law, sociology, and especially economics are usually introduced before the argument is hardly begun. Accountants have used references to "economic value," "economic theory," "economic income," and the like to administer the coup de grace to opposing arguments, and for some reason these vague references and the prestige of the economist and his generalizations have carried tremendous weight among practicing accountants. The economic burning bush is found to glow brightest in discussions of value and income.[1]

Economists may be in at least semi-agreement that income is a form of personalized, individual expectation. This view, except by

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[1] "They [accountants] seem to think the economists have discovered some mysterious type of value with which most people are unfamiliar." D. H. MacKenzie, "Contemporary Theories of Corporate Profits Reporting," The Accounting Review, October, 1949, p. 360. Sidney S. Alexander explains: "Economic science has no single universally accepted body of doctrine that need only be translated into non-technical language in order to tell the layman what 'the economist' believes....It would accordingly be arrogant for anyone to present 'the economist's view of income.'" "Income Measurement in a Dynamic Economy," Five Monographs on Business Income, Prepared by the Study Group on Business Income (New York: American Institute of Accountants, 1950).

chance, will yield a different income for each individual, but decades of conditioning have tended to yield reaction patterns that exhibit some degree of uniformity—products of a common ideology.[2] There is by no means agreement among economists as to the "central meaning" of the income concept, and there is even less agreement about the usefulness of the concept.

We must allow for differences in meaning, but certainly the enthusiasm of Fisher: "Income is the alpha and omega of economics," is not shared by Hicks: "At bottom they [income, saving, depreciation] are not logical categories at all....They are bad tools, which break in our hands."[3] Hayek is certainly skeptical: "...there must go economists' habitual practice of separating out the part of general investment activity which happens to leave the capital stock in some sense constant as something different from activities which add to that stock. This distinction has no relationship to anything in the world."[4]

Pigou seems to be more temporizing and takes the general position that "...perfect definitions cannot be found" for income and related concepts; economists should "try to make them as little imperfect as they can."[5] Boulding has supported the anti-income approach by a devastating attack on his fellow economists for over-stressing the importance of income as an explanation of business behavior.

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[2] "...if carried to its ultimate conclusions, income becomes a subjective feeling on the part of each individual..." Norton M. Bedford, "Need for Supplementary Data in Interpretation of Income Reports," The Accounting Review, April, 1952, p. 196. "It is evident, however, that the accountant's lack of capability in the realm of prophecy will probably leave the profit calculation...an unfinished symphony." George R. Husband, "That Thing Which the Accountant Calls Income," The Accounting Review, July, 1946, p. 253. "To an orthodox accountant, net income is essentially an historical record of the past. To an economist, net income is essentially a speculation about the future." Joel Dean, "Measurement of Profits for Executive Decisions," The Accounting Review, April, 1951, p. 185. "...the calculation of income at the conclusion of an enterprise is but financial autopsy!" William J. Vatter, The Fund Theory of Accounting and Its Implications for Financial Reports, (Chicago: University of Chicago Press, 1947), p. 36.

[3] Irving Fisher, The Theory of Interest (New York: The Macmillan Company, 1930), p. 13. J. R. Hicks, Value and Capital (London: Oxford University Press, 1939), pp. 171, 177.

[4] Friedrich A. Hayek, The Pure Theory of Capital (London: Macmillan and Co., Ltd., 1941), p. 13. G.A.D. Preinreich discussed many years ago the possibility of defining income as existing only after provision has been made for some percentage of growth, The Nature of Dividends (New York: Privately Printed, 1935).

[5] A.C. Pigou, "Maintaining Capital Intact," Economica, August, 1941, p. 275.

> My main cause for dissatisfaction with the existing theory of the firm lies in its deficiency in capital theory. The usual marginal analysis treats the firm as if it had nothing but an income account; it has no balance sheet, no capital problems, and no dynamics....[6]

These uncertainties among economists should be a warning to accountants to beware of glib references to economic income, but most accountants have apparently never seriously doubted that their profit computations were necessary and important information. While economist were retreating from the income concept, the income report attained dominancy over the condition statement, organization men were advocating decentralization and broadening of the profit point of view, and accountants were stoutly affirming that the measurement of periodic income is the heart of accounting theory.[7]

In spite of the continued claims that income reports are indispensible accountants only recently have taken the trouble to enumerate and specify exactly the ways in which such reports are useful. A quick glance at the following tabulations will be sufficient to show that the uses are either extremely vague or they arise because certain present institutions (e.g., income tax) have incorporated income in their

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[6] Kenneth E. Boulding, A Reconstruction of Economics (New York: John Wiley & Sons, Inc., 1950), p. 27.

[7] "It is generally agreed that the measurement of the periodic net income of the business enterprise, particularly in the corporate field, is the most significant and crucial task essayed by the accountant." William A. Paton, and William A. Paton, Jr., Corporation Accounts and Statements (New York: The Macmillan Company, 1955), p. 274. "Income is an important index of economic progress, and its determination is the principal objective in accounting today." Handbook of Modern Accounting Theory, ed. Morton Backer (New York: Prentice-Hall, Inc., 1955), p. 209.

The following are considerably less positive as to the virtues of income.

"...our (SEC's) registration forms for mining companies in the developmental and exploratory stage and industrial companies in the promotional stage require the submission of statements of cash receipts and disbursements instead of profit and loss statements...." Earle C. King, "Presentation of Pertinent Data in Financial Statements," The Accounting Review, October, 1948, p. 353. "No area of capitalistic thought is likely to be examined more thoroughly and critically than that pertaining to profits. The laboristic society will wish to review how profits are made, what purposes they serve, how efficiently they perform these purposes, how they affect the operation of the economy, how they are used, and how they should be used. Sumner H. Slichter, "Profits in a Laboristic Society," Harvard Business Review, May, 1949, p. 346. "It does appear to be too sophisticated a version of management moti-

structure. The list below is more or less representative.

1. As a basis for taxation.
2. As a component of the measure of national growth.
3. As a basis for determining the legality of distributions of corporate property to stockholders.
4. As a measure of the reasonableness of the prices charged by the corporation for its products and services.
5. As a basis for managerial decisions in conducting business operations.[8]

A business economist offers the following meager list of management uses of income figures.

> Among the more important practical applications of estimates of a company's real economic earnings to top management policies are: (1) dividend policy; (2) capital budgeting; (3) pricing policies; (4) appropriations for advertising; and (5) government negotiations.[9]

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vation, however, to claim that the profit factor has no significant influence." D.A. Fregusson, "Accounting and the Price Level," *The Accounting Review*, October, 1954, p. 642. "...the measurement of income is not the sole, or even the most important, aim of accounting; in fact, there are grounds for the belief that the accountant has over-emphasized and overworked the notion of income..." William J. Vatter, *op. cit.*, p. 35.

[8] Charles E. Johnson, "A Case Against the Idea of an All-Purpose Concept of Business Income," *The Accounting Review*, April, 1954, p. 227. Johnson concludes: "Such considerations lend considerable weight to the proposition that managerial requirements are of secondary importance in formulating a concept of business income for use in corporate reports." *Ibid.*, p. 241. Recently there has been a flood of statements pointing out that we need different income concepts for different purposes without identifying the purposes or specifying the necessary changes. "...the deeper truth is that income is properly defined differently for different purposes. Different treatments may honestly be accorded a given experience when the purposive goals are different." George R. Husband, "Rationalization in the Accounting Measurement of Income," *The Accounting Review*, January, 1954, p. 5. "The concept of business income is dependent on the ends served by the use of the income measurement. There is no one correct method of computing net profit. The question of which procedure to use can be decided only on the basis of the purpose or purposes for which the figures are to be used, not on an abstract basis." Albert L. Bell, "Fixed Assets and Current Costs," *The Accounting Review*, January, 1953, p. 44. "The fund theory does not embrace a concept of income, for the reason that income is not definable unless it includes a recognition of the situation and the purpose that relate to it." William J. Vatter, *op. cit.*, p. 95. His following statement certainly goes too far. "No matter how the general purpose [income] figure is defined, it will still be a single amount, a single computation *fit for only a single use.*" (Italics mine.) *Ibid.*, p. 77.

[9] Joel Dean, "Measurement of Real Economic Earnings of a Machinery

It should be observed that the lists in addition to being disappointing avoid the broad aspects of economic resource allocation and factor combination except for a passing reference to capital budgeting. Furthermore, the possible use of income as one of the sources of information for judging whether entrepreneurs have demonstrated ability to appraise potential markets and make favorable factor combinations and thus whether they should or should not be entrusted with such decisions is not mentioned. The latter use may be referred to as the stewardship report, and for complex situations accountants so far have failed to come up with anything better than financial statements and earnings reports. Revenues, in general, tend to indicate demand potentials and elasticities, and expenses are a crude measure of ability to combine factors with productive ingenuity. Failure of accountants to mention such aspects of their work makes further discussion of these points highly desirable.

It seems to be generally agreed that economics is concerned with economizing and allocating scarce resources to satisfy wants. In almost all well-developed societies the price (market) system is used with some modification to guide the allocation process and the distribution of the income among individuals and groups. While alternatives -- including slavery -- may be used, the price system is generally conceded to be the device that tends to allocate with the least loss of satisfaction and with the least interference with individual freedom.[10]

Built into the price system in an enterprise economy is a device which tends to make the process more efficient. Price reflects scarcity relative to demand, and in the pursuit of profits, businessmen will tend to economize those items which have high prices (scarce relative to demand) and to substitute those with lower prices. The effect is that the individual who seeks to increase his profits in this manner tends to

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Manufacturer," The Accounting Review, April, 1954, pp. 255-256.

A business lawyer offers little improvement with the following list: "Let me repeat these purposes of income measurement :

(1) to obtain information on economic progress;
(2) to ascertain what they may presently spend in consumption without impairing their future well-being; and
(3) to determine property rights and obligations as between and among the different members of society, including distribution of the burden of taxation."

Arthur H. Dean, "The Relation of Law and Economics to the Measurement of Income," The Accounting Review, July, 1953, p. 333.

[10] With assumptions of freedom of entry to improve one's position it can be shown that the self-interest motive will tend to move those with higher preferences for "things" into the more lucrative work. At least there is a presumption that more satisfactions result from a free price system. For a discussion see Abba P. Lerner, The Economics of Control (New York: The Macmillan Company, 1944), pp. 50 ff.

increase the social dividend or output. This degree of substitution is carried on until the price of the less desirable substitute is bid up and the decrease in demand for the other tends to bring down its price so that a kind of equilibrium is approached.

The price system with a profit motive tends also to eliminate those businessmen who are prone to wrong guessing and tends to reward the more shrewd and to encourage them to administer society's factors of production. As a part of the overall, semi-automatic scheme it is assumed that there is an alert group of entrepreneurs (businessmen) who have access to financial resources and who stand ready to move in the direction of *expected* profits and away from *expected* losses.

In view of the economizing (allocation and distribution of scarce resources) basis for the field of economics it seems that one of the major functions of reported income is to give information that will help to allocate society's resources for a reasonably high level of satisfaction.[11] Unfortunately reported profit figures are predominately *ex post* computations with limited recourse to the crystal ball with regard to depreciation, bad debts, and perhaps inventories. The result is certainly not *ex ante* income and some economists and accountants may even prefer to abandon the term income.[12] We return to the relationship of *ex post* to *ex ante* later.

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[11] Davidson is concerned with the allocation problem. "With regard to the allocation of resources as it affects capital assets, there are two major questions to be answered. What use shall be made of existing capital assets and what portion of the economy's productive effort should be devoted to turning out new capital assets in each area of production? To the extent that profit calculations aid in the answering of these questions, a profit figure reached after deducting current cost depreciation would be the more useful." Sidney Davidson, "Depreciation and Profit Determination," *The Accounting Review*, January, 1950, p. 46. Bowers is also aware of this function. "The justification of accounting for real profits as well as accounting for any economic income lies in the more fundamental problem of allocating real resources to their various possible alternatives. We cannot economize either individually or socially by economizing merely dollars." Russell Bowers, "Business Profit and the Price Level," *The Accounting Review*, April, 1951, p. 177.

Fregusson mentions the problem in passing. "So far as corporate management is concerned, the accountant's primary function must be to provide information which will be useful in the making of decisions or choosing among alternatives in such a way as to maximize owners' profits and incidentally attain the socially desirable objective of making the best use of our economy's scarce resources." D.A. Fergusson, "Accounting and the Price Level," *The Accounting Review*, October, 1954, p. 639. (Many will feel that Fregusson's incidental benefit may be the more important one.)

[12] "To the extent that the accountant can eliminate guesses, he is substituting something else for income." But: "A definition which

While it may not be essential that income reports be used for reaching economic decisions, one of the contentions of this essay is that the accountant's income report is ordinarily one of the more important existing informational reports for channeling new investment and for combining productive agents. For ready comparison of alternative opportunities in different fields the ex post income related to the necessary investment may be highly desirable, although the decision is, of course, made on the expected rate of return. The usual approach to this problem is to relate the expected incremental return (income) to the incremental investment, but this approach must be modified drastically when the new investment results in the admission of new equity holders who must share the fruits of existing facilities as well as the expected return from the incremental facilities. The complex of existing properties may be sunk costs for some purposes, but their existence and prospects are relevant to new equity holders.

In most cases the investors will prefer recent rather than ancient data.[13] It seems clear therefore that information based on current costs of specific assets is likely to be useful.[14] In practice, all productive

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requires knowledge of all future circumstances is obviously of little practical use." Sidney S. Alexander, "Income Measurement in a Dynamic Economy," Five Monographs on Business Income, op. cit., pp. 7, 29. Notice however: "The fact....that it is impossible to convert the reported accounting income for an individual enterprise into something that can be called economic income for that enterprise does not necessarily dispose of price level adjustments of financial statements as nonsense." Raymond C. Dein, "Price-Level Adjustments: Fetish in Accounting," The Accounting Review, January, 1955, p. 10.

[13] Notice that in computations of goodwill (and incidentally of the value of the enterprise as a unit) it is usual to assume that the purchaser buys tangible and intangibles other than goodwill at current values, and projected income is modified accordingly. This procedure is equivalent to holding that the purchaser will be combining labor, etc., with existing factors at current cost. See for example, William A. Paton and William A. Paton, Jr., Asset Accounting (New York: The Macmillan Company, 1952), pp. 497 ff.

[14] Many accountants however still hold to dollar cost. "The cost of 'consuming' existing capital should be determined irrespective of the intention to replace in kind, to replace with a different type of capital, or not to replace at all. This conclusion appears to rule out, in the determination of income for periodic reporting to stockholders and other non-management groups, the use of either replacement costs or a price index specific to the particular kinds of assets 'consumed' by a given corporation." American Accounting Association, Committee on Concepts and Standards underlying Corporate Financial Statements, "Price Level Changes and Financial Statements," (Supplementary Statement No. 2), The Accounting Review, October, 1951, p. 471. "As a rule we think and act in terms of current dollars, and when a mixture of current dollars and past dollars is presented without classification we inevitably tend to

agents except fixed assets are substantially at current figures, and depreciation on current values is clearly implied unless we wish to allocate resources in such a way as to economize resources on the basis of heterogeneous costs. Moreover, when comparisons are made with earnings and assets, it seems that both earnings and assets should be on a current basis. Current decisions are made on the basis of current costs, and the reader need not be reminded that gauging the future is difficult enough even with the latest data and trends. To combine depreciation on assets acquired in 1910 with current costs is not likely to help the problem of resource allocation.[15]

On the practical level resource allocation in a market economy is carried out by businessmen who decide to expand, form new firms, shutdown, abandon, etc., in response to expected demand and expected cost characteristics. Clearly, these expectations are influenced by the latest experiences and trends in factor costs and income. Clearly also, these current expectations cannot be influenced by future experiences. We do not learn from the future, and future costs are therefore irrelevant for any possible current decision. We measure *ex post* because these are the only data that we can possibly ~~be~~ measure~~d~~ and because our experience has shown that our expectations and *ex ante* planning must be based on our experience in similar or analogous situations. It is the estimates of the future that are conduct determining, but our estimates are conditioned by the patterns of the past.

For resource allocation in new investment -- expansion -- it is true that a planning board often allocates resources on the basis of payout or more sophisticated economy studies of expected return at the margin. Existing facilities could be taken as given and new funds placed in those directions that promise to add the most net return when used in conjunction with the existing environment. Capital budgeting is usually done in this manner, and when supplemented with occasional studies as to the overall yield on all assets, the process works acceptably. The purchase of existing facilities by new investors and the decision to abandon, however, must take into consideration the expected profitability of the entire properties. We encounter the common situation of a firm whose overall earning prospects will not support a high capital value but whose prospects for additional funds show a huge return on the increment. One of the difficulties of financing such expansions by means of capital stock is thus suggested. A little reflection shows that the situation may also be reversed with existing stockholders not willing to share

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regard them as homogeneous." W. A. Paton, "Depreciation and the Price Level, A Symposium," *The Accounting Review*, April, 1948, p. 121. "Isn't it true, in a competitive economy, that the only generally influential, 'conduct conditioning' costs are those currently in effect?" *Ibid.*, p. 122.

[15] An opposing view: "Only under assumed liquidation are current costs of appreciable significance at the date of a balance sheet." Perry Mason, "The 1948 Statement of Concepts and Standards," *The Accounting Review*, April, 1950, p. 134.

ownership unless the price is adjusted for conditions that are in part extraneous to the return on the increment. In each case new investors are asked to share a part of the existing facilities and new creditors must also consider their position with respect to all assets and existing liabilities.

Suppose, to illustrate, that producer A has been extremely successful while B has been suffering losses. Suppose that A has an investment prospect that will promise 4% on the increment, and B has a specialized prospect that promises 12% on the increment. Assume also that the plans are not interchangeable, i.e., A cannot adopt B's plan or *vice versa*. A can go into the capital market and, by sharing the entire existing financial structure with the furnishers of new capital, can get the necessary capital for 3%. On the other hand producer B may need to pay 15% in order to get incremental investors to share the dismal prospects from existing properties. Thus capital would be distributed at the margin with little regard to its expected profitability at the margin, i.e., A can place marginal capital where it earns 4%, and B is unable to finance plans that promise 12%. The effect of permitting average prospects to influence capital at the margin can be lessened somewhat by specialized investment contracts for incremental funds, but some misallocation seems to be unavoidable if the equities are intermingled and reported profits enter the calculation.

Curtailed operation on a long-term basis often takes place by not replacing existing plants or by the withdrawal of units from production. Such decisions indicate that there are more attractive opportunities available on a current cost basis elsewhere. So long as the prospect of incremental profit is not sufficient to attract funds, there will certainly be no expansion, and unless the old facilities can earn more than they can earn if they were redistributed throughout the economy, the activity will fold. To the extent that current costs indicate the value of the items in alternative uses most businessmen will probably conclude that such costs along with some income reports on a current basis will improve allocation decisions.

For shortrun contraction variable costs are usually compared with changes in expected revenue. If depreciation is in part variable, the sacrifice in operating is related to replacement costs when the assets would be replaced with and without operation. That is to say, the cost of using (over not using) is related to the difference between two replacement costs related perhaps with an interest factor. An individual firm may, in fact, never make the replacements at either date, but for the economy as a whole it may be assumed that there are those who are contemplating investment or disinvestment in the field. For the guidance of these custodians who are rewarded if they invest in ways that are profitable for them as individuals, it is the current cost of getting the assets *now* that guides them in combining and proportioning economic resources.

Thus for outsiders who are contemplating getting into a business, current (and expected future) costs are certainly the most useful. When obsolescence or supersession is in sight the current value of the assets should reflect the foreseeable portion of the decline. This point deserves emphasis, for it is widely misunderstood. *The current cost of ex-*

isting assets will be influenced, to the extent that technological changes can be anticipated. Therefore, it should be clear that whether or not businessmen replace in kind or with physically similar assets is completely irrelevant and simply beside the point. The impact of new, modern, efficient assets is reflected in and measured by the resulting discount or value decrease shown in the current price of old (existing) assets. For this reason among others it is important to distinguish between replacement cost and current cost. The latter is, of course, the current purchase price of existing assets. There is an influence tending to preserve the *status quo*. If a brokers' margin is involved the buying price may be higher than the selling price. The buying price must be competitive with values in new assets, but to the seller the new assets must appear to be better values. The profession is apparently indebted to Weston for pointing out this relationship, although his statement refers primarily to output and seems to be unecessarily restrictive.

> It is sometimes urged that a practical objection to the use of current costs is that the firm might not wish to produce the same assets or products. However, if the firm wished to use different assets because of the availability of improved equipment ....The argument that the firm may wish to produce different products is irrelevant. The only question that is raised and which appropriate accounting data seek to answer is how to measure the costs of producing a given set of services that are actually being produced.[16]

Let us now turn to the type of income, if any, that promises to be most useful in gauging the stewardship ability of management. In most economic systems, it is extremely important that better managers be rewarded and matched with society's scarce resources. It simply does not make sense to match incompetent managers with expensive facilities. There may be other ways of testing managerial efficiency, but careful income reporting -- especially in a profit-motivated economy -- seems to provide a reasonable approach.[17] How, then, should profit be measured for this purpose?

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[16] J. Fred Weston, "Revaluations of Fixed Assets," *The Accounting Review*, October, 1953, pp. 487-488.

[17] It is of course possible to substitute other measures of efficiency for the profit computation. In fact, with the recommendations of Lerner and others to the effect that shortrun output should be pushed until cost at the margin equals price, profit figures could conceivably by dispensed with. See also J. M. Fleming, "Price and Output Policy of State Enterprise," *The Economic Journal*, December, 1944, p. 336. Beckwith comments: "...efficiency might be measured by intraplant unit costs, especially if all plants were required to use uniform cost-accounting methods. In making comparisons between plants, it would be necessary to allow for differences in equipment and other factors, but these differences affect profits also, and unit costs are not affected by many factors unrelated to efficiency which do affect profits." Burnham Putnam Beckwith, *Marginal-Cost Price-Output Control* (New York: Columbia University Press, 1955), p. 152.

The concept of stewardship is difficult to define, but one of its characteristics is certainly responsibility for accomplishing some sort of objective or objectives. An accounting for the degree of accomplishment is therefore necessary if there is to be interpersonal communication between the steward and his peers. Unlike the Biblical story of the talents, modern stewards are likely to have more definite commissions with the objectives more clearly set forth and the criteria of accomplishment more carefully defined. If the stated objectives should be to operate within certain constraints and to increase the "fund," then an income report is a straight-forward example of a stewardship report that sets forth -- according to recognition and measurement rules -- the degree of accomplishment for a stated period. It is true that the final figures, and probably the intermediate figures as well, are the net of shrewd and stupid decisions some of which were made during the interval and some of which were made many periods before. Unless the constraints on the steward are extremely detailed, it does not follow that a stewardship report is useless or not a proper summary of activity because all the details and the results of each decision are not given.[18]

Managers in our society tend to be selected and rewarded for their ability to produce profits and thus there is usually some pressure toward low-cost production. In the pursuit of low-cost production, managers tend to economize the dear agents and be prodigal with the factors that are relatively cheap. If the system is out of equilibrium, there will be a shift from the relatively dear factor to the relatively cheap until the former is supplanted, or until the decreased demand reduces its price, or until the increased demand for the low-cost agent raises its prices and it is no longer relatively cheap.

Labor and materials are usually on a current cost basis. If plant is in terms of say 1945 costs, managers may be misled into being

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[18] "Many a wise and desirable managerial decision~~s~~ is not reflected in the income statement until years after the decision was made. Often, the effects of various decisions are so mingled in a given income statement that the only result is an average of unknown weighting and of therefore dubious significance....Although there may be validity in the statement that entity income does...represent a test of over-all management, this test is far too crude and much too vague and general to serve either as an appraisal of over-all managerial efficiency or as a guide for managerial decisions." William J. Vatter, op. cit., pp. 34, 35. Notice that the won-and-lost columns, without showing the myriads of good and bad field decisions are often used as a measure of a baseball manager's performance after "standard budget allowances" for inherited personnel and ability of competition are made. An income report may be viewed as a won and lost report that averages sharp and dull behavior and sometimes confuses responsibility. And like the won-and-lost record, the income record is probably the most adequate single measure of progress toward the usual objectives. Vatter's position is in the right direction but extreme.

more extravagant with plant facilities and over-economizing on current repairs, maintenance labor and materials to an unwarranted degree. The insidious part of this arrangement is that accounting on other than current costs tends to have reported profit increase as the factors of production are wrongly proportioned. That is, higher shortrun profits are reported if managers over-use existing facilities when depreciation-base costs are lower than current costs. In a similar manner if amortization of recorded cost is higher than the charge based on current cost, managers may be led to believe that labor and material costs are relatively cheap and over-economize the use of existing plant. Shortrun profit calculations based on original unmodified cost will tend in the shortrun to encourage careful managers to move in the direction of less longrun profits and higher social costs through inefficient proportioning.[19]

A serious confusion of stewardship function sometimes results when managers are shouldered with costs for which they were not responsible or when the measurement rules are not formulated carefully enough to isolate the effects of outside influences such as changes in price levels or in replacement cost structures. Failure to make some kind of analysis in this area may mean that factor proportioning will be badly done.[20]

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[19] Apparently some accountants disagree. "One of the underlying postulates is that you continue in business....Therefore, the fluctuations in the value of the assets that you have to have to continue in business are immaterial as long as you continue in business." George O. May, Five Monographs on Business Income, op. cit., p. 206.

[20] The separation of the effects of specific major economic factors is well supported by accountants. "...to make a forecast of future expectations...from an income statement in which price fluctuation effects are not shown separately is nothing short of foolhardy...." William J. Vatter, op. cit., p. 72. "Each non-monetary asset carried forward is adjusted to current cost with the index number appropriate to the account. The gains or losses on the assets carried forward are called capital gains, and they are not taken to net worth through the regular income statement." Myron J. Gordon, "The Valuation of Accounts at Current Cost," The Accounting Review, July, 1953, p. 373. "First, there is the margin between selling price and current cost of acquisition and selling -- the cost at the time of the sale. This I shall call 'management profit.' It has been defined as income after the 'recovery' of physical capital....Second, there is the so-called 'gain' or 'loss' arising from the change in price between the time of acquisition and the time of sale, or between acquisition and consumption. This has been called 'price profit,' or 'price loss,"....it is not profit at all...."Willard J. Graham, "The Effect of Changing Price Levels upon the Determination, Reporting, and Interpretation of Income." The Accounting Review, January, 1949, p. 16. Dutch accountants have been emphatic about the use of current costs, especially in their Kostprijs calculation. See, for example, H.J. Van der Schroeff, De Leer van de Kostprijs (Amsterdam: N.V. Uitgevers - Maatschappij „Kosmos", 1953).

To the extent that acquisition gains and losses are not separated from other gains, a shrewd acquisition decision may cover a very poor operating or factor - combining record. Moreover, if an entire industry procured its assets at about the same time, capital may be over or under encouraged to flow into the field unless current costs are used.

The measurement of relative performance for managers who are shouldered with plants of different ages and efficiencies offers difficulties. If depreciation is on similar fixed assets or on a comparable base, it is possible to compare managers without regard to their ability at fixed asset procurement. To compare the direct or marginal unit cost of each unit may however fail to consider that one set of existing sunk facilities may be much more efficient than another.[21] Depreciation on original cost does not seem to help much unless price levels increase in line with efficiencies. For example, older plants were in most cases constructed at less dollar cost than newer plants. Consequently depreciation based on original costs would result in less charges for the older plants. To the extent that the increase in technology keeps pace with the change in the value of the dollar, unit costs that include depreciation on original cost may be acceptable bases for comparison of relative managerial efficiency.

It should be clear that current costs provide an automatic adjustment for relative efficiencies, and the automatic adjustment *tends* to be in proper amounts. Current costs, as opposed to replacement costs, should reflect -- if the market is functioning as a market -- the impact of technological changes as well as cost reductions in replacing capital goods that may be substituted for existing plant. Thus in the valuation process the advantages of using new or more efficient assets -- and consequently the disadvantages of using old less efficient units --

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[21] In practice "sunk" is used to mean *not relevant* for some decision. We must distinguish between "sunk cost," "sunk" (immobile) facilities, and "sunk" values. For certain decisions some values and costs may be relevant and some not relevant. It is sometimes argued that there is no sunk cost unless it is practically impossible to sell the service potential, lease it, borrow on it, or sell the entire business. Some *sacrifice* would seem always to be relevant to some decision. What is probably meant is that historical cost *may* become nonrelevant and therefore be "sunk." Alexander perhaps assumes too much mobility for the assets themselves. "....to most people...market value is the appropriate measure of well-being associated with each item of wealth in a man's possession. If one man feels that some of his possessions mean more in terms of his well-being than their market value, and other less, he is free to buy more of the first type of goods and sell some of the second type until market values and well-being are matched so far as he is concerned." *Op. cit.*, p. 13. In some cases usage of the asset may or may not reduce the interval of immobility. Only in the extremely rare cases in which usage, repairs, and upkeep have no effect whatever on the service potential is it correct to treat the sunk factor as a free good when proportioning it with other service factors.

are reflected in current cost and therefore in depreciation based on current cost. (It is, of course, true that there may be economic rents arising in either case due to the peculiarities of the asset and business combinations with which the particular asset is associated.)

It seems clear that the use of current cost should aid in determining relative efficiencies of managers and thus should help society to reward efficient managers and to reject inefficient ones. It is true that the measurement of managerial efficiency may be approached in other ways, but the possibility of using current costs for better proportioning of factors seems indisputable.

It should by now be clear that there are many genuine economic problems whose solution might be encouraged by some sort of income computations for productive entities. This paper is essentially an argument that economic income -- if the term must be used -- be measured so as to assist in the allocation and combination of scarce resources. It is also contended that current costs of individual agents should be matched with current revenues in order to build a foundation upon which those operating society's resources can superimpose their own modifying estimates of the dim but, to use a Patonian phrase, "not completely inscrutable" future.

> Economic profit, then, is the difference between current revenues and current costs. It represents the difference between the economy's current valuation of the goods and services rendered by the firm and its current valuation of the goods and services used by the firm.[22]

In conclusion, it seems desirable to mention the function of income as an index of the amount that could be consumed without being any better or worse off.[23] This index-of-withdrawal approach loses some of its appeal in a dynamic growth economy and seem better fitted to the corner-grocery unit of activity. If such a criteria for using income reports is accepted, capital maintenance in terms of physical assets or purchasing power seems to be most appropriate of the feasible solutions. The general index for price-level changes applied to original costs may be adequate for this purpose, but this adjustment is definitely inferior to current costs.

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[22] Edgar O. Edwards, "Depreciation Policy under Changing Price Levels," The Accounting Review, April, 1954, p. 269. Notice that the "economy's" or "society's" valuation is due to those members of society who are at the margin. The usual argument that non-marginal buyers and sellers are price-determining although they are not at the margin is not convincing. This is a universal answer that can be applied to all arguments. Everyone and everything are relevant to every decision by the simple logical trick of defining relevancy to make the statement true.

[23] This viewpoint reached its apex in John R. Hicks, Value and Capital (London: Oxford University Press, 1939), pp. 171 ff. But all bookkeepers are familiar with "drawings in anticipation of profit" and the balance of the drawings account as a measure of living within (or without) the means furnished by the entity.

INCOME -- DISCOUNTING FUTURE EXPECTED RECEIPTS

> But to inquire whether I [expectation I] on the first Monday is preferred to II [expectation II] on the second Monday is a nonsense question; the choice between them could never be actual at all...[1]

It is the writer's purpose in this essay to examine in some detail the recommendations and models that have been advanced -- chiefly by economists -- for the definition and measurement of business income. Specifically the operational definition of income as difference between the capitalized value of the prospects at the beginning and end of the period is examined in detail. The problem is discussed from several angles. For example, the charge that the definition is circular because capitalized value implies discounted future income needs reviewing. Moreover, the assumption that a comparison of expectations at two different points in time leads to nonsense -- as implied by Hicks -- or at least is not related in any way to what a businessman thinks income should mean calls for consideration. The leverage factor resulting from capitalizing changes in optimism and pessimism requires attention.

The charge of circularity is an old one and goes back at least to the writings of Irving Fisher.[2] The usual constitutive (non-operational) definition of periodic income is often in terms of the maximum amount that could be distributed without making the firm's future prospects any worse than they were at the beginning of the period.[3] The usual rules for implementing this definition (i.e., the rules of correspondence or the operational instructions) insist that future prospects discounted at the end of the period should be equal to the sum of the discounted prospects at the beginning of the period plus the income for the year. Thus, income is defined to be equal to the amount that could be withdrawn and leave the discounted remaining prospects equal to the amount of the discounted prospects at the beginning of the period. Clearly this definition is

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[1] J. R. Hicks, Value and Capital (London: Oxford University Press, 1946), p. 177.

[2] Irving Fisher, Elementary Principles of Economics (New York: The Macmillan Company, 1923), pp. 107-143.

[3] The background statement for this position was given by Hicks in the first edition (1939) of Value and Capital. "The purpose of income calculations in practical affairs is to give people an indication of the amount which they can consume without impoverishing themselves. Follow-

still not fully operational, for it fails to give specific instructions for specifying the entity, discounting and measuring prospects, and applying discount rates.

The charge of circularity may be based on two somewhat different lines of argument. It may be pointed out that the prospects are in effect future income, and that in order to find current income it is necessary as a prerequisite to estimate all future net favorable circumstances until eternity (at least in the compound interest sense) or, if the horizon is finite, the windup value. Thus the problem of finding current income becomes the problem of applying measurement rules for spreading the known total future receipts to periods with the constraint of always having prospects remain equal. Those who insist that what is being discounted is estimated future receipts (net) and not income are breaking the circular chain by giving operational content to "receipts" and relating both periodic income and capital value to receipts by constitutive definitions and intervening variables.[4] Unfortunately net receipts over the life of the concern when modified for additional investment and for disinvestment add up to what a lot of accountants and businessman think the total reported income should be. It is clear, of course, that there is no a priori reason why reported income should be defined to equal the total net receipts over and above maintenance of investment, but a large number of persons do insist on such an identification. There is a related way of attempting to avoid the charge of circularity. Current income is not identical with expected future income, although it is defined in terms of expectations of future income. That is to say, it may be argued that current income is determined by estimates of future income and that the estimates of the future need not be influenced by the amount reported as current income. This approach breaks the circle by introductory the independent concept of future income and assumes that estimating rules are available for this concept. Most accountants will no doubt prefer Alexander's "expected receipts" as being less confusing and more operational. Unfortunately it is probable that future prospects (whether called receipts or future income) may indeed be influenced by current income reports, and, if so, a partial circularity returns.

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ing out this idea, it would seem that we ought to define a man's income as the maximum value which he can consume during a week, and still expect to be as well off at the end of the week as he was at the beginning." (p. 172)

[4] Sidney S. Alexander tries to escape the charge of circularity by drawing a sharp distinction between expected net receipts and expected income. "Capital can be measured from the anticipated inflow of receipts and then the measure of capital so obtained can be used in the determination of income. Therefore there is no circularity in our definition of income." (p.30) "If those receipts were themselves income, we would be engaged in formulating a circular definition. But fortunately, for our purposes the receipts need not be income but can be a mixture of income and return (or reinvestment) of principal. The objection of circularity is based on a confusion of receipts with income." (p. 29) Page references are to Five Monographs on Business Income, Prepared by The Study Group on Business Income (New York: American Institute of Accountants, 1950).

The other line of argument upon which the charge of circularity is based is related to the selection of a discount rate. It may be asked whether the discount rate that is selected is not in fact the operational definition of the rate of income. In other words, is it not necessary to know or to estimate the income rate in order to get a discount rate that is a necessary part of the operation of measuring income?

The obvious way of attempting to avoid this circularity is to deny that the discount rate is equivalent to the income rate. There is a general feeling that the discount rate is one of the determinants of periodic income so that in order to avoid a charge of partial circularity it must be shown that the instructions for determining an appropriate discount rate are independent of the rules for finding income. If the discount rate is the rate at which the investor is moved from indifference into investment action, then it is subjective with the investor and presumably also includes his subjective appraisal of the premium for risk. Thus the discount rate may be the minimum longrun rate (income?) that the investor will need in order to invest. His actual and expected income may be considerably larger, and of course after the investment has been made his actual return may be smaller than the motivating rate.

For the accountant imputed rents, salaries, interest and windfalls of various kinds turn up in the catch-all that is termed net income or net profit. Inasmuch as accounting net income includes normal return it seems that the measurement of accounting income by discounting future prospects cannot escape being partially circular. That is to say, the resulting periodic reported income depends on a discount rate and the discount rate in turn is a partial determinant of the capital values whose differences make up the reported income. Except for some isolated instances accountants have not been concerned with measuring income by discounting future prospects, but it is not inconceivable that they should be intrigued with the approach and wish to make use of it at some future time.[5]

An interesting characteristic~~s~~ of the discounting technique of measuring income is that the resulting income will always be equal to the rate of discount unless the definition of income is broadened to include the results of unfavorable or favorable changes in expectations. Of course definitions may be set up so that the discounted distribution is the normal return on investment, and only the changes in expectation are defined as income. Thus what are often viewed as capital gains ~~are~~ or losses (modified by the discounting process) become income.

It must be clear to the reader that the discounting process and therefore the necessity for selecting a rate is somewhat gratuitous. Economists have used this process of valuation as a model of what investors should do, and it may not bear much resemblance to how such values are in fact derived. In fact, the emphasis on future estimates may mean that the construct can never be used widely and given general operational

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[5] At least as late 1952 George May, whose attitudes have long been those of an enlightened accountant, could see no usefulness in what an

content. Thus, it may be that a particular business is valued at the beginning and end of the period by an index of sun-spot activity modified by selected astrological readings. To the extent that these criteria set values which result in exchanges, it may be argued that the objectivity of the resulting offers should prevail over an abstract model that is based on discounting some individual's estimates of future forces that may or may not act on the entity. Other models may be constructed. Nevertheless the economist is probably correct in holding that there is a general tendency to value property in terms of discounted return, that most alternative schemes may be translated into the discounting framework, and that results tend to agree with what is usually meant by being no better or worse off.

It is interesting to note that Irving Fisher, the American pioneer in interest and capital theory, was too astute to be caught without at least a semantic defense against the familiar charge of circularity. He states:

> When values are considered, the causal relation is not from capital to income, but from income to capital; not from present to future, but from future to present. In other words, the value of capital is the discounted value of the expected income. (p. 142) Income is derived from capital-goods. But the value of the income is not derived from the value of those capital-goods.[6]

Attention has been directed to the view that a comparison of capital values at the beginning and end of a period is not acceptable because the choice is never available. But is the possibility of a choice necessary before we can escape the current charge -- feared by so many scientists and empiricists -- of asking questions whose answers are non-operational? More specifically, how can the absence of alternative possibilities influence the selection of the base from which to measure income. It is entirely possible that the assets are so specialized and buyers are so few that the only alternative available at any time is to abandon the operation. Whichever alternative was in fact followed will influence expectations and therefore reported profit, and unless plans for the future (as well as expectations) are the same for the beginning and end of the period, the change in hopes and plans will usually influence capital values and therefore reported income. To say that new alternatives or ideas may influence future expectations and reported income is not at all identical with holding that the income concept is meaningless because it

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economist had to offer along the lines of income determination. His comments on Alexander's monograph were at best, ill considered. See Five Monographs on Business Income, op. cit., p. 205. "There is an economic concept held by a very respectable body of opinion that is of no practical use to this particular group."

[6] Irving Fisher, op. cit., p. 107. See also pp. 133, 142.

is based on a quantity determined by applying rules at point A and another quantity determined in a similar manner at point B. How can he know that he is no better or worse off unless he has a choice? To ask the question is to answer it. It is possible for a man to reflect and estimate that his present feeling of being well-off is less than, equal to or greater than a specified feeling in the past. The new capital value is adjusted (according to the definition) so that he judges his subjective feeling of well being to be unchanged. The question then becomes whether one is able to make such comparisons in a dynamic framework; the problem is not one of interpersonal comparisons of well being, which are acknowledged to be impossible. A man's memory may be bad, but, unless we believe in temporal solipsism, we cannot deny that he has one and that its product may be ordered and compared. Clearly this type of income is entirely subjective and cannot be tested by appeal to the social consensus that is a requirement of objectivity. Income is thus truly the result of value judgments, it is personal, and it is private.

Let us now turn to the fluctuations that may result in reported profit due to changes in subjective appraisal of prospects, i.e., changes in the individual's optimism and pessimism. One of the most serious objections to the economic model of income results from its tendency to enlarge or magnify changes in the individual's estimates through the discounting device. The problem is due to the effects of taking the entire discounted value of changes in optimism about future prospects as income or loss of the period in which optimism changes. Such discounted amounts may be excluded by definition from the income calculation and reported under separate headings, such as capital gains or capital losses. To make such a separation tends to identify the reported income rate with the discount rate and to encourage the charge of circularity.

The change from certain knowledge to some degree of uncertainty does strange things to the economists' model for income. The disposition of such a model to fluctuate wildly due to changes in the discount rate is well known, although it is possible to treat such differences as "capital" gains or losses and to define the smoothed figures that remain as income. Suppose now that we permit the discount rate to remain unchanged and vary only the time interval between the date at which one revises his estimate of the magnitude of a future event and the actual date of that event. If there is no need to revise the estimates at all (perfect knowledge), the reported income is completely smoothed to a constant rate on investment by the discounting process.

If knowledge is less than perfect and a revision of prospects is made, the amount of smoothing will vary with the lead time between revision and event. If this internal is, say, thirty years the fluctuations induced in the reported income of the revision and subsequent years will be small. If only a year or two separates the two critical dates, the fluctuation reported in the period of discovery (revision) is large. (The exact amount obviously will also be influenced by the absolute magnitude of the revision.)

This effect does not seem to be widely understood, but it should be expected. The smoothest reporting results from certain knowledge.

The time interval between revision and event may be used as an index of the knowledge horizon or of the degree of foreseeability. The less the vision ahead, the greater the fluctuations. The limit come when the discovery and the event belong to the same profit-reporting period. (We neglect here the possibility of not discovering the need for revising the prospect until it is already past.) In this case there is no smoothing and the full impact of the revision is reported in the period during which the revision is made. Again it may be feasible to define such irregularities as non-income and maintain the smoothness of the income stream by definition.

The accountant observes these tendencies with interest, because he rarely smooths future expectations with discount rates. So long as he does not discount and does not adopt other rules for smoothing, his reported income figures will tend to fluctuate sharply. The full impact of changes in expectations that meet his recognition standards is reflected in the period of revision. Now this tendency toward fluctuations will always be greater than the tendency shown by the economists' model, even though there may be some hope that the fluctuations will be numerous and be smoothed some by averaging.

A new problem is encountered in the averaging process. Variations in the "certainty" (foresight) of accountants may be considerable over the periods, so that more revisions are made in some periods than in others. Moreover, insight into either favorable or unfavorable revisions may be bunched with erratic results. In any event, considerable manipulation may be possible in either case.

Suppose that the only income prospect is one hundred dollars to be received at the end of the second year. For the simplest case suppose also that the businessman does not change his expectations about the amount to be received and that a rate of 6% is appropriate for all valuations that need to be made. In this case there are no receipts other than the expected one hundred dollars at the end of the second period. We now ask how much income, if any, should be recognized by economists during the first period. The value of the prospect of the hundred dollars at the beginning of the first year is $89.00 and the corresponding figure at the beginning of the second period is $94.34. There has been according to the usual measurement rules an increase in the value of the business of $5.34. This increment may be given the title of income so long as there are no realization restrictions and value added is assumed to be related entirely to the passage of time. If, however, economic activity and value added are related to buying, processing and selling goods, the relationship of an interest factor of this kind may be pretty far-fetched. (The income, so defined, is a period income instead of product income, if we may borrow some adjectives from the cost accountants.) Now when value is added, the favorable prospects increase, and the discounted increase appears as income. The point to be emphasized is that, if the decision and the receipts are recognized in the same period, the full amount of the increase is treated as income (capital gain?). If the receipt is in a later period, less is taken in the current period and future intervening periods are credited with the interest factor. It is possible, of course, to call the value increases due to time "capital gains," but the reward for lending funds has long been

considered income to the rentier and the title 'income' will no doubt continue to be used even though the major activity of the firm has little to do with waiting. This method tends to take up value added when the shrewd decisions are made (or are discovered) while traditional accounting tends to wait until the value is received.

Let us now turn to the first variation. Suppose that the discount rate of 6% is appropriate for both the beginning and end of year, but that during that interval all parties concerned become more optimistic and instead of seeing one hundred dollars at the end of the second period, all parties now expect the receipt to be $200. In this case, the value of the prospect at the beginning of the first year is $89.00, and the value of the prospect at the beginning of the second year is twice $94.34, or $188.68. What is the income to be reported? Obviously, several possibilities present themselves. One possibility -- and perhaps the most common one -- is to call the entire difference in the value of the prospects, the entire $99.68, "income" and thereby inform the owner that he may take out this amount at the end of the first year and still have a prospect valued at the original $89.00. Another possibility is to report the $5.34 as before and to name the excess $89.00 as some kind of capital gain or "gain arising through increased optimism." Still a further approach may recompute the original value of the prospect on the basis of the $200. Thus, the beginning value of the prospect would be twice $89.00 or $178.00. The income to be reported would be the difference between $188.68 and $178.00, or $10.68, which is of course twice the original reported profit of case one, $5.34.

How do economists select among these alternatives? Meaningful answers must be in terms of income objectives. Keeping original values (discounted original expectations) intact may make little or no sense years later when owners have changed and the passage of time has made the original expectations dim and fuzzy. On the other hand, it is difficult and time consuming to recompute the base from which income is to be measured and to use latest expectations for the beginning base. If the entire increase is taken to be distributable without impairing the capital of the firm, why not call the entire increase income? If a rational means of separation is available, a separation of that part which is due to changes in optimism may be desirable. It should be noticed that changes in optimism are especially important, because relative to the "time" concept of income they are capitalizations and therefore employ a leverage factor. Thus with a six percent discount factor the reported "gain" that results from a doubling of expectations is almost seventeen times as large as income defined in terms of the discount factor.[7]

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[7] "The error introduced into accountant's income by basing depreciation on a necessarily fallible estimate of the useful life of the equipment will be infinitesimal compared to the error introduced into economic income by the uncertainty of future receipts." Sidney S. Alexander, op. cit., p. 59.

We may digress for a moment and speculate about the problem of selecting the "proper" expressions of optimism. Due to the leverage factor it seems that considerable care should be taken in appraising changes in optimism. One is confronted with deciding whose opinions should be selected and with problems of interpersonal appraisals. The opinion of the closely-knit owners or managers permits the possibility of manipulation to further their aims. On the other hand, the owners (if closely-knit) and managers are in perhaps the best position to estimate such matters. Reference to outside opinion such as market quotations is sometimes possible, but such independent opinion may not be available. With the widespread use of reported earnings to estimate the value of the concern, looking to investors for values of the concern in order to measure income does not look very promising. Furthermore, it is sometimes alleged that investors tend to project the level of current earnings into the future (perhaps in perpetuity). It may still be argued that to the extent bona fide offers are forthcoming, the sacrifice in not selling is measured by such valuations, and therefore the capital value at the end of the period is a cost of continuing the business. Notice that this line of argument does not need to consider how the prospective buyer values the concern. Such values may be very volatile in thin markets, but this general approach contains merit. Certainly the accounting profession should hesitate a long time before assuming that accountants or economists are always competent to make such valuations.

Suppose to change the illustration that expectations remains constant at one hundred dollars at the end of the second year. Suppose also that the rate of discount at the beginning of the first period is 6%, while at the end of the first period the appropriate discount rate is only 5%. Evidently the value of the prospect as seen at the beginning of the first year and discounted at 6% is $89.00. At the end of the first year the value of the future prospect discounted at the prevailing rate of 5% is $95.24. An equivalent figure resulting from the use of a 6% rate is $94.34. Again we are faced with the problem of deciding which difference is to be called income. It should be noted that the $89.00 for the beginning value of the prospect is changed to $90.70 if the beginning value is recomputed on a 5% basis. First, suppose that the investment was made on a 6% basis and resulted in an actual cost of $89.00. The income may be defined as the difference between $95.24 and $89.00. The resulting $6.24 is, of course, $0.90 larger than the amount resulting from the application of 6%. Perhaps economists may prefer to continue to use 6% for measuring income and to show $5.34 as the income. The remaining $0.90 may then be considered to be a capital gain that results from buying the prospect on terms more favorable than those now available.[8]

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[8] Alexander has given considerable thought to these matters. "...the pure economic income....is the difference between the year-end net worth and the year-beginning net worth, both valued according to the knowledge and beliefs current at year's end." (p. 20). "For a business corporation, variable income equals the change in tangible assets plus the change in the going value minus that part of these changes attributable to changes in expectations of future receipts." (p. 71) "The difference

There is, of course, a case for considering such "capitalized rate" gains or losses as income and burying them in the income measurement. To the extent that 5% now expresses the current effective basis the owner might be able to sell his prospect at the end of the first year for the larger figure and thereby realize the $0.90 gain. In other words, to the extent that there is a market for businesses of this type and the rate at which they are bought and sold is now 5%, there is a more or less objective gain, and for those economists, businessmen and accountants who are not concerned with realization, recognition is in order. From one point of view, it may be argued that by not selling the prospect discounted at 5% the owner is in effect buying the prospect from himself at5% and that the relevant cost for record keeping should be the opportunity (alternative) cost or sacrifice involved. This line of argument abandons the fixed psychological base for income measurement that is based on a fixed percent (in this case six percent) and substitutes for the fixed percentage base a series of imputed market values that are inferred from the change in the discount rate and the fact that the owner does not sell. Where the markets are well established, this alternative satisfies in part those who are concerned with objectivity.

There is a definite advantage to the traditional approach as outlined above. As a first step it is assumed that businessmen should discount future prospects in arriving at value. It may even be assumed that some calculation of this sort is, in fact, used by businessmen. A whole series of rates of discount for businesses of varying risks are usually available from the completed transactions and the bid and ask quotations of specialized prospects. Thus, approximate rates may be available while appraisal figures themselves may not. By assuming in the model that the rates are applied in a specific manner to all prospects that are to be valued, one may make up his own appraisal (valuation) figures. Of course, he is highly subjective in finding which one of the rates is appropriate for his type of risk and in selecting the future service flows to be evaluated, but at least there is an operational procedure that may be substituted for market appraisals. On the surface it appears that estimates of future net receipts are subjective while the discount rates may be determined from objective markets. A little reflection will show that the discount rates depend, in part on risk and on the probability features of the expected receipts themselves, so that the selection of the appropriate rate is also subjective.

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between the hindsight value of year-beginning equity and year-beginning equity as valued at the beginning of the year may be termed 'unexpected gain.' We must choose between the alternatives of considering unexpected gain as an actual increase in wealth or as a mere revision of an estimate of wealth. As an actual increase of wealth, it should be included in economic income, as a revision of an estimate, it should be excluded.

The first viewpoint is based on the assumption that a man is as well off as he thinks he is, and not as well off as someone with superior knowledge either now or later may know him to be." (p. 61) Op. cit.

INCOME - THE ACCOUNTANT'S APPROACH

It is the purpose of this essay to compare the economist's construct of income as changes in discounted prospects with the typical accountant's measurement rules for revenues and expenses. Specifically it is argued that the application of a discount rate to future prospects can be dispensed with by a continuing concern; that the practice of assuming that waiting is the primary activity of a firm and that value is added in a compound-interest relationship with time is only rarely necessary; that the usual accounting rules for recognizing value increases will tend to diminish the smoothing effect of interest and to permit total reported income to vary more freely with decisions and activity other than passive waiting; that the assumption of Moonitz-Staehling that accounting rules are poor substitues for the discounted-value approach and should be used only when the future is uncertain, is not warranted.

As a basis for discussion let us begin with the excellent discussion given by Maurice Moonitz and Charles Staehling, who have made one of the few serious attempts to compare the discount approach to income determination with the more common cost-revenue approach.[1] These authors begin their work by setting out to show:

> (1) the determination of the value at a moment of time of a prospective series of cash receipts and disbursements, (2)...the calculated effect of time-duration in valuation, and (3) set out clearly the evidence of profit...in a situation in which all of the necessary facts are assumed to be definitely known.

Their data are summarized below:

		Prospective cash receipts and outlays to occur at the end of each year					Total of receipts and disbursements entire period
Values at beginning of five-year period		1	2	3	4	5	
prospective receipts	$43,951	$10,000	$12,000	$11,000	$ 9,000	$10,000*	$52,000
prospective outlays	24,577	6,000	7,000	5,000	6,000	5,000	29,000
resultant value of the investment	19,374	4,000	5,000	6,000	3,000	5,000	23,000

*includes cash received from sale of remaining assets, $3,000.

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[1] Maurice Moonitz and Charles C. Staehling, Accounting: An Analysis of Its Problems, I, (Brooklyn: The Foundation Press, Inc., 1952), pp. 120 ff.

The present value (at 6%) of the series of receipts, adverse interests (payments) and remainders may be summarized:

Present Value

Year	Receipts	Outlays	Remainder
1	$ 9,434	$ 5,660	$ 3,774
2	10,680	6,230	4,450
3	9,236	4,198	5,038
4	7,129	4,753	2,376
5	7,472	3,736	3,736
	$ 43,951	$ 24,577	$ 19,374

Moonitz and Staehling then calculate the annual net profit with complete knowledge of all relevant future events. At the end of the first year the receipts of $10,000 have been received and the outlay of $4,000 has been made. In addition all future receipts are more valuable as they are all one year nearer to cash. The value of these receipts, including the one for the first period, has increased by $2,637 from the value at the beginning of the year. In a similar manner the outlays are nearer, and their value has changed by $1,475. The difference of $1,162 represents the net value added and is defined as the profit of the first year. The $4,000 cash receipts in excess of outlays is treated as a withdrawal. In a similar fashion the profit for the second year is $991; for the third, $753; for the fourth, $436; for the fifth, $284. Total reported profit for the five-year period is $3,626, which is, of course, the difference between the total net receipts ($23,000) and the present value of these receipts ($19,374).

It must be observed that Moonitz and Staehling do not define profit as it is commonly defined in accounting. The typical accounting definition is based on the assumption that the capital of the firm is kept intact, while they assume systematic withdrawals and the reported income is therefore the income on a variable capital base. The return of capital is summarized (p. 131):

Year	1	2	3	4	5
Withdrawal	$ 4,000	$ 5,000	$ 6,000	$ 3,000	$ 5,000
Profit	1,162	991	753	436	284
Return of Investment	$ 2,838	$ 4,009	$ 5,247	$ 2,564	$ 4,716

Suppose, to show the effect of a variable capital base and to illustrate the influence of different receipt and payment patterns, that a single payment of $29,000 is due at the end of the first year and replaces the given series of payments. The present value of the receipts would be unchanged $43,951, the present value of the adverse payment of $29,000 would be $27,358 and the purchase price would then be changed to $16,593. The first year's profit would be ($2,637 less $1,642) $995. The second year's profit would be $2,194 and the remaining years would report $1,608, $1,043, $567. Now, it is clear that profits defined in this manner will be higher after the lump-sum adverse payment is made, for this payment results in additional investment instead of the return of capital for the first year.

Suppose, to vary the illustration, that the receipts are unchanged and that the $29,000 adverse interest is due at the end of the fifth year. The present value of the outpayment would be $21,669 and the value of the business would be $22,282. The first year's reported profit would be $2,637 less $1,300 or $1,337. The point to be observed is that the timing of the receipts and disbursements influences the pattern of reported profits, because with the Moonitz-Staehling assumptions the invested capital changes as the timing of the receipts and payments changes. If their assumption were modified so that the recovered investment were immediately reinvested the reported income would have been equal period by period.

Period	1	2	3	4	5
Earnings on Original Investment	$1,162	$ 991	$ 753	$ 436	$ 284
Earnings on Reinvestment	-0-	172	410	726	879
Profit	$1,162	$1,163	$1,163	$1,162	$1,163

Of course, it is a well-known fact that the application of compound interest will tend to report a constant rate of return on capital. Net income, defined operationally is the result of applying measurement rules to what are considered to be the determinants of income, and the measurements are then judged to be good or bad in relation to the usefulness of the results. Inasmuch as there are no windfalls or estimating errors, net income (so defined) is due solely to the increasing nearness of the returns of remaining capital and is measured solely through the discounting telescope. Variation in business activity therefore brings about no changes in income but changes in the amount of capital that is assumed to be recovered.

It is at precisely this point that the assumption of a going concern is so important in accounting. One of the decisions required by an auditor is whether or not an assumption of an indefinitely continuing concern is appropriate. If such an assumption appears to be warranted, a particular set of measurement rules is selected and applied to the events affecting the entity. If the assumption does not seem

to be warranted, a different kit of measurement rules is used. (Notice for example the different valuation rules for statements of affairs and for depletion in a one-shot mining operation.)

Among the subsidiary assumptions that are implied by adoption of the going-concern approach is that the capital, in some meaningful sense, will be kept intact and that only increases in value in excess of that necessary to preserve the integrity of the investment will be labeled as income.

The chief advantage of the continuing-concern assumption should now be clear. With capital held intact for an indefinite period in the future, the influence of discounting is reduced to a negligible (primarily smoothing) effect. Moreover, the rate selected for the discounting process is a matter of little importance. The continuum of future expectations will be approximately the same at the beginning and the end of each period, so that discounting at some positive rate of interest will yield approximately equal values at the beginning and end of the period. In the absence of unusual irregularities and with capital kept intact, the smoothing effect of compound discounting will tend to yield a constant periodic income. The influence of this more or less constant factor is not important for the measurement of accounting income and is accordingly neglected. This position has often led to the charge that accountants do not understand the importance of the "time value of money." We may still be concerned about interest on the current period's receipts and outlays, but if these flows are assumed to be matched or centered during the year the amount of current interest should be unimportant and can be neglected.

Thus accountants can neglect the discounting approach if they can derive some measurement rules that will provide for keeping the future prospects approximately equal in perpetuity (at least in the compound interest sense). These rules consist of a procedure for recognizing new values that arrive in the specified interval (revenues) and the interest effect of approaching future revenues may be disregarded if the stream is expected to be more or less continuous and reasonably uniform. The going-concern approach, therefore, presupposes that capital consumption is provided for and that the horizon is unchanged and extends, like a monotonous prairie, indefinitely into the future. If the horizon of prospects remains unchanged, the accountant feels no need to view it with the discounting glass that makes the effects decrease as a function of the period of waiting. But measuring income by keeping "capital intact" is circular, if "capital" is the result of discounting income.

The accountants' problem is thus transferred from the problem of discounting future prospects to one of finding suitable rules for keeping capital intact without using income to measure capital. He must deduct from revenues an amount sufficient (when reinvested) to insure within tolerable limits that the wall of future prospects will not be greatly changed. This problem consists of finding acceptable conventions for measuring capital consumption and for deducting enough from revenues to guide (encourage?) businessmen toward the investment necessary to keep

prospects unimpaired. Traditionally these measures of capital consumption have been related to costs and to specific service potentials that can be estimated without also estimating enterprise income, e.g., shelter for buildings, fund-raising possibilities for inventories, period of protection for patents.

A few related remarks about the revenue stream may serve to direct the discussion toward costs and their expiration. Suppose that in a particular case the revenues consist of a lump-sum receipt well in the future, e.g., a long-term bond with no explicit interest. The discounting procedure for taking up income recognizes a small amount of income in the early years and larger and larger amounts as the maturity date nears. The implied assumption is that we are receiving more benefits for equal intervals of waiting as the maturity gets nearer. This assumption is related to the feeling that income should be associated with the market-value increase period by period and can be tied to activity or benefit only by changing the assumed investment each period to agree with the market value of the bond. Thus the increase is not a larger increase in value for identical services - the capital investment is presumed to be larger period by period. If the interest could be withdrawn each period, it is clear that the income recognized each year would be the same. Or if the investor has a seasoned holding of numerous bonds that are individually replaced at maturity, his capital investment (by the market test) would be unchanged and his recognized income under the compound-interest method would be the same as if he used a straight-line computation. It is, of course, a consequence of the going-concern assumption that we do not let the bond equivalent (e.g., the facilities) mature or sell them without replacement on a continuous basis. Again the capital base is kept constant and the use of a discount factor is not necessary. A generalization seems to be in order: the discounting technique is an appropriate measuring device when a shifting capital investment is assumed. The shifting base tends to agree with the probable sales prices at these calculation dates and thus, by not selling, the owner can be said to be making renewed investments of these amounts at each date. The going-concern assumption traditionally has implied that such interim sales values are not relevant, and they are therefore excluded from the possibilities that require consideration.

The accountant's rules for additional investment and for disinvestment are relatively simple and lead us to a consideration of cost. To the extent that the (costs) outlays are regular and the plant has "struck its gait" we can neglect interest and discount factors in determining periodic income. As in the case of revenues, discounting cost streams that are assumed to be roughly uniform and perpetual serves no useful purpose.

It is the early years before the firm's investment is seasoned that give accountants trouble at the conceptual level. Until the capital assets have had time to season it seems that some sort of compound interest calculation is necessary. In the context of an indefinitely continuing firm a new plant is worth more than a used one of similar output and efficiency precisely because the wall of major replacements is farther in the future. In order to keep a stream of revenues intact the expenditures are likely to be highly uneven during the early years of

seasoning. To preserve the prospects it seems essential that accountants deduct an amount larger than current expenditures from the revenues of early years.[2]

To the extent that the timing of these outlays is not regular, the time-value of money becomes important and the discounting problem returns to haunt the accountant. To maintain the integrity of the prospects requires some sort of deduction in advance of outlay during this temporary period. What is the proper amount of this deduction? If we assume that the excess (earmarked) revenue funds will be invested in the business we must assume the earning rate of the business. The partial circularity is obvious.[3]

The circle can be easily broken by adopting rules that avoid the firm's own current earning rate. The accountant can use the rate of return on outside investment opportunities as the assumed discount rate. If the funds are in fact segregated and invested the return will be definite enough, and certainly no one would normally be interested in letting funds lie idle. It remains to estimate the amounts which at the rate of return would keep the net prospects unimpaired. If the funds are put to use, it seems clear that their return will tend to increase the revenue stream, and that the expense - the deduction from revenue - can be increased by amounts equal to the amounts of revenue growth. Clearly one of the compound interest methods of cost spreading seems appropriate for what the accountant is trying to do.

It is of course possible for the accountant to neglect the interest factor in this area, and hope that the induced variation will be immaterial and lost in the errors of hundreds of other estimates. In the unmodified replacement method of depreciation it is usually assumed that over the long pull for a going concern the periodic variations induced by irregular outlays to keep the long-term earning power intact may be neglected completely - that no smoothing is needed. The retirement reserve technique in conjunction with the replacement method aims only at smoothing these irregular income effects and may or may not include the refinement of compound interest calculations.

Neither economists or accountants have agreed on what the ideal income-reporting pattern should be. Should the reported yearly income be smoothed to serve as an index of expected future prospects? Should the

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[2] This problem is closely tied with retirement reserves sometimes found in connection with the replacement method of depreciation. See "Depreciation Accounting in Utilities," The Accounting Review, January, 1943, pp. 1-9.

[3] Partial circularities are relatively common and seldom destroy the validity of the work, although they can be annoying. Canning, to the horror of many accountants, held that inventories might be valued at net selling price less a profit element at the average overall firm rate. While it is true that some circularity is present, the "profit" element in inventories is usually such a small part of the total that its own influence may be neglected.

annual figure he related somehow to production activity? sales activity? planning activity? Which results and specific changes are high lighted in the income report for all who are interested? Should a quarterly report, for example, be smoothed by seasonal adjustment to be an indicant of the yearly income? The long-run rate of income? Some other concept of income?

Economists have apparently approved the annual-indicant view. National income and related quarterly figures are adjusted to annual rates. The discounting recommendation tends to smooth erratic tendencies and to present a longer-run view. Yet at the time of purchase, the economists' approach tends to take up any excess values as income or capital gains and to recognize other income evenly over time as if the only contributing factor were waiting. The timing of these excess-value recognitions according to the timing of the value added may induce wide variations in reported income. The correlation of income recognized and value added is an objective of both economists and accountants. The details vary considerably.

The accountant's measurement rules permit the reported income to vary (without the smoothing effects of discounting) from period to period according to current activity in the fields of revenues and costs. Opportunities for management's contribution to profit show up in larger current revenues and in provision for keeping future prospects intact with lower instead of higher current costs. In the latter connection accountants tend to look at capital consumption as related to past investment as well as to current expenditures and try to decide what portion seems to be a capital expenditure to provide for increasing future prospects and what portion seems to be necessary to keep the prospects intact. The opportunities for shrewd management obviously arise from doing either of these jobs with the least sacrifice. If the level of future prospects is maintained at a very low cost, the current profit report will reflect the fact. Unfortunately except in the renewal (replacement) method of "depreciating" capital assets, shrewd decisions for maintaining prospects do not show up as increased profit until later. As will be pointed out in the following essay shrewd expenditures for increased future prospects (capital expenditures) are not reflected in the period in which the ability was exercised, and the value added to the prospects is assumed to be exactly equal to the amount of the expenditure. It should be observed that such rules are not necessarily implied by the accountant's approach to income measurement. Other rules with less stringent requirements for recognizing increases in prospects could be substituted.

There is genuine doubt among accountants as to whether income that is reported as a fixed discounted rate on capital plus the net of capitalized changes in optimism in the most useful construct for those guiding society's economic resources. Accountants seem to prefer a distribution of reported income that is more closely related to current activity. Thus, they tend to match costs with revenues (where possible) on a benefit basis that is specific for each service potential and to emphasis the periodic contribution of revenues recognized over the costs necessary to maintain specific prospects for service. To the extent that depreciation is recognized on a straight-line basis accountants are assuming equal

costs for service consumption and thus tending to accentuate the effect of the variable periodic contribution of revenues over other costs. Thus in the Moonitz-Staehling illustration, instead of equal reported annual profits of $1,162, application of straight-line would yield successively $725, $1,922, $3,118, $315, and ⟨$488.⟩[4]

In the following essay we will turn to the problem of matching costs with revenues according to specific benefits received compared with the total expected (specific) benefits. This approach has some factors in common with valuation: for example, it is necessary to estimate total benefits expected from each asset. Notice, however, that a discount rate is not necessary, for we substitute the original cost as the capitalized value and proceed to match it with revenue in proportion to service rendered to total expected services. Interim changes in optimism may influence the write-off, but the leverage factor provided by the capitalization process is removed.

In the Moonitz-Staehling illustration a depreciation rate that approximates the benefit process may be derived by relating capital deterioration to contribution of revenues over other outlay expenses. The required rate works out to be $0.81875 of capital consumption for each dollar of contribution. Total capital consumption would be spread to the successive years: $3,275, $4,094, $4,913, $2,456 and $1,638. If recovered funds are reinvested at 6% the reported profits by year would be $725, $1,103, $1,530, $1,282, and $985 instead of the uniform $1,162.

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[4] Incidentally the charge that straight-line tends to report higher rates of return on old assets whose book values are low is only partly true. After the plant is seasoned the book value will be equal to approximately one-half of original cost under straight-line procedures, but under the compound-interest methods the depreciation charges will average about the same, consequently the reported profit on the assets will be changed very little, and the book-value will be even lower. The net effect is a higher reported rate of return on book value.

COST-VALUE IDENTIFICATION AND INCOME MEASUREMENT

It is the writer's purpose in this essay to review the rationale of cost-value identification and to unravel some of the associated threads that are often found in discussions of income. The limitations of cost as a measurement scale for value are discussed. In the jargon of scientific method accountants accept a construct of value in a constitutive sense with poorly formed and inadequate rules of correspondence to relate the construct to the area of empirical data. They also take another construct - cost - which has slightly better rules of correspondence (operational content) and relate these constructs in such a way that the recognition and measurement rules for cost may be substituted for the less desirable ones for value in the relevant decision area. In the course of the discussion the identification of cost and value at purchase is treated and the similarities between cost allocation on a benefit basis and traditional valuation are compared.[1]

Cost at the time of purchase is usually assumed to be equivalent to value at the time of purchase -- market value -- without serious discussion of the point. To many it seems evident that the transfer (purchase) not only establishes the evidence of the amount of the cost, but it also establishes value to the buyer and to the seller. But market value is not equivalent to value in use to the buyer. The following offhand statement is typical.

> The condition which validates the cost figure is the simultaneous action of two independent parties motivated by self-interest. The price-aggregate that emerges at the moment a bargaining exchange is consummated is a mutually acceptable "valuation"; hence the quantitative record of the "service acquired" by one party should be in agreement with the quantitative record of the "service rendered" by the other party.[2]

At the time of purchase the buyer must think that the expected value of the incremental discounted services to be added to the expected services of all his other assets will be at least as great as the cost of the addition. Thus we may assume that the amount of his discounted

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[1] The writer has treated parts of this problem elsewhere. See: Inventory Valuation and Periodic Income (New York: Ronald Press Company, 1942), pp. 34-35. Also: Handbook of Modern Accounting Theory, ed. Morton Backer (New York: Prentice-Hall, Inc., 1955), pp. 333-334.

[2] W. A. Paton and A. C. Littleton, An Introduction to Corporate Accounting Standards (Chicago: American Accounting Association, 1940), p. 26.

expectations for the *marginal* services will be as great as the purchase price. It may be added that there is a tendency for the buyer to keep on acquiring units until the discounted expected benefits from the last (least remunerative) unit is about equal to the purchase price. Furthermore, assuming free access to the fund markets, there is a tendency for him to buy all assets until the discounted expected return is approximately equal to the cost of funds.

The accountant, realizing that under the profit motive any particular agent of production should be acquired until its cost is equal to the expected value of its marginal product, treats each agent *as if* it contributes to the revenue area only the amount of its cost. After each asset (productive agent) has been treated in this fashion any excess product (or rent) is attributed to the non-cost factors -- to the "enterprise." Entrepreneurship, it must be emphasized, is not considered to be an asset except perhaps occasionally in an incomplete fashion in the goodwill calculation. Where the period of income computation covers the entire cycle of operations, it is natural to subtract costs of specific factors from total revenues and attribute the remainder (positive or negative) to those who under existing institutions are permitted to appropriate it.[3]

Where the accounting period is shorter than the cycle of operations, there will ordinarily be some agents that have already yielded their entire services at statement date and there will be other agents that have yielded only a portion of their benefits. What seems more plausible, in view of the economic precedent, than to write off each long-lived agent (marginal or intra-marginal) with the assumption that its services are equal to its cost? The total deferred cost on a statement of financial position at any time then should be the discounted services expected to be received from the *marginal* (least important) unit multiplied by the number of units. More accurately -- the detailed discussion comes later -- the unamortized cost remaining after applying the benefit doctrine should not be far from the value often imputed to the marginal unit.

We may ask why cost adherents -- and there are apparently many -- bother about value anyway. The essential problem of income determi-

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[3] See: *Inventory Valuation and Periodic Income*, *op. cit.*, pp. 3-4. "The total services recognized for a given enterprise are made up of those contributed by factors purchased from outside groups and those contributed by the enterprise itself. Revenues may be taken as the *total* amount of recognized services rendered from both sources. By defining closely the limits of the enterprise and devising rules and conventions for determining the amount of costs which expire, it is possible to make a reasonable estimate of the services contributed by 'outsiders.' The difference is equivalent to the contribution of the unrecorded factors of production, where this phrase is meant to include services from all the economic factors and agents which have not been acquired by exchange transactions. The modern accounting system, then, reflects periodic net income as a residuum after the contribution of the recorded factors has been subtracted from the total contributions recognized."

nation according to the modern cost view is a matter of matching cost and revenue. When one considers the well-nigh impossible task of finding separable values for each asset in conjunction with a varying background of supporting assets and a shifting business environment the retreat to the seemingly safe cost approach is at least understandable. However, certain weaknesses appear in the cost approach, and many accountants remain loyal to the vague concepts of value.[4]

While at the time of purchase discounted expected services must be at least as much as the cost, accountants do not feel constrained to put such assets on the records at figures above cost. The expected services from a particular unit depend on a somewhat arbitrary ordering of the unit with regard to the margin. That is, the value of a particular asset depends on its supporting assets and also on its ordering in the acquisition series.[5] The value of the services actually received may of course, be far more or far less than the value of the service *expectations* at any time. Furthermore, the separation of value contributions from individual assets is usually impossible. The accountants' compromise is to find some sort of measure for specific services rendered and to be rendered by each asset or class of assets, and to use these measures to assign the costs. Any excess services (economic rents) are imputed to the organization and appear~~s~~ as income.

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[4] Not only is there confusion of cost and value in accounting, but there is even confusion as to who among accountants stands for what. The following statement is considerably more representative of Paton's life-long view than later statements under unfortunate joint authorship. "It is the function of accounting to record values, classify values, and to organize and present value data in such a fashion that the owners and their representatives may utilize wisely the capital at their disposal." William A. Paton, *Accounting Theory* (New York: Ronald Press Company, 1922), p. 7. Many accountants also agree with this more recent statement by Norton M. Bedford. "...the activities of a business firm may be considered as the process of acquiring values from outsiders, rearranging such values in different forms and in the process adding value itself both types of which are then disposed of to customers." "Using Supplementary Data to Interpret Reported Income," *The Accounting Review*, October, 1953, p. 517.

[5] Imputation of value to individual assets at the margin cannot be added to yield the value of the enterprise. In practice the accountant often approaches the problem by looking at individual assets (Edwards) and also by trying to encompass the whole organization (Dean). "A comparison of subjective asset value at the beginning and end of a period is essentially a comparison of past revenue-cost expectations with current revenue-cost expectations." Edgar O. Edwards, "Depreciation Policy under Changing Price Levels," *The Accounting Review*, April, 1954, p. 268. "In economic terms, he [the individual] finds the present capital value of his entire future earnings and spends as income this year one installment of a lifetime annuity on that capital value." Joel Dean, "Measurement of Profits for Executive Decisions," *The Accounting Review*, April, 1951, p. 185.

Even if the above rationale for carrying assets at cost is accepted a scheme to apportion cost to the individual income periods must be devised. Vague references to "some systematic manner" certainly do not quality for professional standards.[6] Unless we are to use some arbitrary rule we are forced to argue that cost should be written off as the services expire or that some method of direct valuation, which may or may not keep the earning power of the business intact, should be used. Certainly the earning power concept is a typical valuation problem, and, as will be pointed out later, the benefit theory is at bottom also a problem of valuation.

Unless one of these valuation approaches -- benefit-cost-allocation or valuation in the accepted sense -- is followed there is no method of assigning cost that is consistent with a central meaning for income. Certainly exercise of caprice for making allotments is not consistent with the accepted meaning of income. One might write off all of the cost at once or write off the cost according to determinations resulting from the use of dice, cards, astrological readings or other devices. Many hopelessly irrational methods may still qualify as systematic! The forced conclusion is that if we abandon the service (valuation) approach to asset writeoff, the usual income construct is abandoned with it.

It is not difficult to understand the desire of accountants to identify costs and values in some way. They wish to preserve the stability of recorded costs and yet present periodic income figures that retain traditional meaning for businessmen and others who might use them. Identification of the two helps attain both aims. Depreciation may be defined as the spreading of a cost to operating periods, and the principle for making the assignment may be based on value determinants in the form of benefits received and benefits expected. It is unfortunate that some very good accountants have apparently distrusted "benefit expectations" as a partial determinant of amortization and have advocated such non-operational, pseudo-guideposts as "equitable bases," "systematic

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[6] The following quotation is from Accounting Terminology Bulletin Number 1 of the American Institute of Certified Public Accountants, Prepared by the Committee on Terminology. "Depreciation accounting is a system of accounting which aims to distribute the cost or other basic value of tangible capital assets, less salvage (if any), over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. It is a process of allocation, not of valuation." Paton and Littleton are more helpful. "Under accrual accounting, depreciation is not a valuation process nor a means of capturing replacement prices from customers; it is simply a step in the process of associating past cost, which measures the planned effort to produce goods or services, with the revenue actually derived from the goods or services produced." (p. 17) "With costs properly classified and service lives reasonably determined, how shall plant cost be spread?....Since units of plant are conceived as bundles of services the best procedure would be to apportion their costs wherever possible in terms of the stream of services rendered. In other words, some form of production or output method would be the most appropriate base." (p. 84) Page numbers refer to An Introduction to Corporate Accounting Standards, op. cit.

manner," "fairness to periods."

Some accountants have become so confused that they consider cost to be the fundamental basis for accountability and tend to neglect value altogether. For old-fashioned stewardship accountability it seems clear that we may sometimes use physical units. The steward may be held accountable for specified numbers of fagons of each type of wine and may be released from responsibility upon authorized withdrawal. Why should cost be an accountability factor?

The monetary unit acts as a common denominator and permits a vast simplification of the accountability report. Instead of reporting each item of inventory separately (which incidentally is still done in some unit-control systems) the steward may classify, combine, summarize and report in terms of some common unit that can be used to measure responsibility accepted and discharged. In the process of abstracting and scaling some attributes are considered to be relatively unimportant for current purposes and are therefore consigned to the vast pool of data about which the information system is silent and mankind remains ignorant. From accountability in terms of physical units the next obvious step is to specify the dimensions of importance and the measurement rules by which the transformation of physical units is to be made. Shall we use costs or current values? Judgment of relative worth by the manorial lord? Social judgments?

A number of present-day accountants, including a recent American Accounting Association committee, appear to hold that accountability must be in terms of original (or aboriginal) cost. From the accounting viewpoint cost is reasonably objective and the valuation decision that worth (value) is at least as great as cost has already been made by the purchaser. There are some valuable properties that are acquired without cost, for occasionally items come under an area of stewardship that are the results of gifts, thefts, or perhaps acts of God. Is accountability to be denied these values because they do not result from a transaction that resulted in a cost? Such a conclusion seems fantastic. If one admits that value is a proper concept for concern, there can be no question about the desirability of integrating the costless items with others. Cost in its usual definition has lost its isophomorphic relation to the variable of concern and no longer justifies its role as a scale of value. The fact that the unit is costless means that it is not subjected to the control imposed by an investment decision, i.e., that expected services when discounted must be greater than cost. The discounted expected services from the donated asset may be higher than market or alternative cost, but they also may be very much lower. Recording such items at current market cost fails to recognize that management's service expectations may be unrelated to such a cost figure in the usual equal or greater than association.

It should be noted that traditional accounting attitudes toward asset writeups and writedowns are at least consistent with (small comfort!) the cost-service-expectation requirement for original entry. Under usual cost-revenue accounting, increases above original expectations -- new surges of managerial optimism -- are ordinarily neglected.

Original optimism at the time of acquisition in excess of cost is neglected and subsequent surges above the original level are likewise neglected as being irrelevant or lacking in evidential support.

The case is entirely different if original expectations are subjected to extreme pessimism and become so black that their discounted value no longer is above cost or unamortized cost. Most accountants feel that if expectations break through their original level, i.e., the cost barrier, a writedown is indicated. They are consistent in the sense that they wish the value of discounted expected services to be at least as high as cost, and they are not especially concerned about expectation changes as long as the total remains above cost.. The extra expectations, if they materialize, must grind through the slow mill of realization before they are shown as legitimate value increases.

A compromise often arises when discounted expectations are definitely lower than originally anticipated, but are still above cost. This situation is often encountered in the inventory field and is met in a forthright manner by those who advocate the traditional retail method of computing inventory. Markups are clearly expressions of increased optimism and are consequently not permitted to influence the inventory "cost" figure. Markup cancellations are taken above the line and do not result in a writedown of cost, because current expectations after the markup cancellation are still above original expectations. Traditionally stratospheric soarings of expectations are not sufficient to support an asset writeup and recognition of gain. The presence of goods marked up but unsold may indicate a surge in optimism but such markups are not considered sufficient to support a gain.

Notice, however, the treatment of a markdown. The markdown is an expression of a decrease in sales expectations below the original expectation level. Perhaps nowhere else is the accountant's position more clearcut. A markdown indicates that sales expectations are below those held originally, and the inventory is decreased in proportion (as a rule) to the decrease in expectations.[7]

Accountants are not in complete agreement regarding damaged goods. If an article that cost $100 and was marked to sell for $300 is damaged and is now marked at $180, accountants who hold to the expectation approach will argue for an inventory writedown to $60. Those who do not use the expectation approach may select from several alternatives, but many of them do not recognize a loss unless the sales expectations (net) are below original cost. The equivalent position in retail inventory accounting would define markdowns in terms of original cost and treat reductions up to the entire original markon as markup cancellations. Obviously an inventory composed entirely of items whose net sale values are no greater than cost could mislead short-term creditors with regard to the debt-paying ability of the concern. There is some evidence that creditors expect a certified inventory to turn in the usual turnover period and to provide funds equal to the inventory figure plus a normal markup.

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[7] For a more detailed treatment of loss recognition rules in accounting see my "Loss Recognition," Accounting Research, October, 1955, pp. 310-320.

It should also be observed that the controversy about applying cost or market to each item or to the entire inventory can be approached in terms of expectations. If we consider expectation levels for the entire inventory, we may offset expectation increases on some goods against expectation decreases in others, and apply the cost-or-market rule to the entire stock in trade as a single asset. If an accountant favors expectation levels in terms of individuals items, he may apply the rule to each item and not permit any increase in expectation to influence the inventory figure.

The retail method clearly uses the latter approach. If the earlier position is combined with the retail method, markdowns would be subtracted from markups or vice versa. (It should also be recalled that advocates of cost or market, whichever is lower, feel that a reduction in replacement cost is equivalent to a markdown, i.e., a decrease in selling price below the originally marked price will follow a decrease in acquisition cost.)

Let us now turn to the allocation process for fixed assets and particularly to the residual known as book value. The unassigned costs that have not been charged to operations are sometimes referred to as going-concern value, or more romantically as costs awaiting their destiny.[8]

Accountants, like many other professional workers, seem to derive inner satisfaction from defining constructs that cannot be tested outside the profession. In practice the independence of going-concern values from market values is usually stressed. If the firm should actually sell the assets, then the results are, of course, market value and practically by definition market values are not permitted to be more than a partial determinant of going-concern value. Going-concern value is what results from applying the accountants' rules for measuring going-concern value. This is operationism at its best and worse. (An equivalent position: "Intelligence is what intelligence tests test.") It appears as if the definition is conveniently broad enough to include the results of doing what the accountant wants to do with no chance whatever of being proved right or wrong by reference to data or constructs from without the system.

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[8] Going-concern value is not to be confused with a phenomenon with a similar name, "going value." The latter is assumed to arise at least in part because the waiting period of building and coordinating is over and the anticipated income stream is nearer. The difference between the going value of a firm and the current value of all specific assets is an approximation of goodwill in the Canning sense of "master valuation account." Eugen Schmalenbach shows a good feel for probabilities and a disregard for realization in this connection. "A successful investment can bring big profits; if it fails it can cause a heavy loss....The gamble has come off....This means that my business, because it has won through, is worth much more than the amount shown in my capital account." Dynamic Accounting, translated by G. W. Murphy and Kenneth S. Most (London: Gee and Company, 1959), p. 28.

While going-concern value may well be an after-the-fact definition to give a label to the results of applying rules the accountant wishes to apply, its name does suggest some limitations, and accounting tradition has set some further limitations. For an upper limit, a widely accepted rule assures that the going-concern value of a standardized asset can not be more than its current market value plus installation costs plus the contribution (marginal income) that could have been earned while the change is being made. This total is presumed to represent the maximum sacrifice that should be involved to keep the earning facilities intact, and expectations in excess of this total are disallowed in a manner consistent with the similar rule for original cost.

A tempting, but non-allowable, lower limit suggests itself. It seems that going-concern value should not be less than what rational management could get for the individual asset by outright and immediate sale. If going-concern value is below the sales value, management seems to be irrational in not following the path that promises greatest profit by selling the item immediately. The asset in question, however, may be indispensable for operations. If all other assets including the non-recorded value of entrepreneurship were immediately transferable to their next best alternative uses without loss, the going-concern value of a particular asset might be imputed in this fashion, but, if these conditions are not met, the sum of all imputed values will be a larger total than the market value of the individual assets. This relationship follows because each will include in its "going-concern" value the same benefits from avoidance of interruption and transfer -- a multiple counting of the most flagrant kind.

In terms of idealized operational instructions going-concern value has been equivalent to the original cost multiplied by a fraction whose numerator is the benefit still expected (remaining) and whose denominator is total expected benefits. Benefits may of course be estimated and correlated with time, activity or modifications of both, and must be estimated in conjunction with the total environment in which they are a part. In a similar way the allowance figure when compared with original cost should indicate the fraction or proportion of total expected services that have already been received or wasted. This approach is idealized, but society has the right to demand meaningful constructs and professional competence in implementing those constructs. Accountants cannot build a profession by refusing to accept professional responsibility for constructing workable measurement rules and presenting information that has meaning to those who make society's decisions.

One group of accountants emphasizes that total expected benefits should be used for the denominator to allocate the cost under the benefit doctrine. If the expected benefits from a warehouse are in terms of five periods' shelter, the fact that the maximum possible benefits might - with different conditions - extend over twenty periods is considered to be irrelevant. This peculiarity of the benefit or service approach needs special attention because a number of accountants are uneasy about the dependence on original expectations, and wish to use maximum possible benefits. To these accountants, a life of twenty periods of equal possible services calls for a writeoff of one-twentieth of the cost each

period. Measured from the maximum possible services there has been a decline that these accountants wish to use as a guide for taking a part of the cost to product, or to idleness, or to the period.

The relationship of cost allocation to the economic valuation model is much closer than many accountants perceive. Both require an estimate of future services to be expected. The allocation approach requires that some measures of services received and expected be available. The measures, it should be emphasized, are usually of specific services and do not need to be in monetary units. The resulting fraction is applied to the original cost figure, which, as pointed out above, is an imperfect monetary expression of expectations at the time of acquisition. The valuation technique requires the estimate of future service expectations in monetary units at each statement date, and requires further the selection of appropriate discount rates. The methods are similar in that both require the identification and measurement of estimated services. They differ in that the cost allocation procedure dispenses with interim discount rates and the necessity for discounting estimates in monetary units each period.[9]

It is interesting to view the direct-versus-absorption-cost controversy in terms of differences in the ways in which expected services are identified. Whether these costs are in fact period or product costs is completely definitional, and no amount of semantic manipulation can "prove" that such costs are period or product costs. But definitions are not selected by caprice. We stipulate that costs attach to product or to periods because it is convenient and useful to so stipulate, not because a specific quantum of sacrifice from a past decision somehow inherently follows the service forever through the endless labyrinths of space-time. In connection with, say, establishment costs we probably agree that there are benefits to be received from keeping the establishment going. Even if there is no business in a particular interval, we may ~~say~~ still assert that future revenues are closer and therefore value

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[9] It may be interesting to compare further the economic model for valuation with cost allocation on a service or benefit basis. Cost allocation requires estimates of expected services at the time of acquisition and subsequent estimates of services expired periodically. Estimates of appropriate discount rates are not necessary and are replaced by the use of original cost (or similar) figures. But notice that the determination of the original cost figure may have had as one of its determinants a discount rate! And the continued use of original cost base may be roughly equivalent to continued use of the original discount rate and original expectations. The substitution of current replacement costs, in a similar fashion, is roughly equivalent to changing either the discount rates, the expectations or both in accordance with changes in the market appraisal of these factors. Within limits it may be argued that expectations are related to the individual firm under survey and that the discount rate is largely the result of alternatives available elsewhere. This distinction should not be carried too far, because within a single firm a discount factor is needed to express some probability features of expected receipts.

has been added by the costs necessary to preserve the integrity of the concern.

But if we accept this position, does it follow that we must also accept the treatment of establishment costs during periods of idleness as assets which have services to be received as the future business materializes? The orthodox accountant's position relates these costs to original expectations, and he may indeed feel that it is useful to defer them and match them with revenues when the revenues are realized. The direct coster tends to identify the services from these costs as inexorably related to the period in some esoteric fashion, or he tends to support a valuation doctrine based on total possible expectations instead of actual expectations. Accountants, regardless of their previous persuasion, would be well advised to identify the end-products of their work (the objectives) and to devise constructs and rules that are consistent with these objectives. Vague feelings and doctrinaire assertions may have meaning in such a teleological context. Costs and benefits and revenues attach because accountants say they attach, and accountants say they attach because it has proved useful to have a directive that reminds him to treat them as if they do attach.

Let us now return to the accountant's traditional approach to the income problem. It has been pointed out that his income-determination process is made up of recording and assigning costs to agents of production and then charging these costs against the new values recognized (revenues). Now revenues are the result of all factors -- recorded and unrecorded -- working together. The excess of revenues over assigned costs (the assumed contribution of outsiders) is presumed to "attach" to the enterprise and to be the contribution of the firm. This contribution includes various economic rents and the contribution of (so-called) entrepreneurship in excess of the cost of hiring managers. This conventional (not quite arbitrary) allotment of services to cost factors up to the amount of the cost involved and to non-cost factors for the excess seems strange to businessmen and to some economists.[10] The process has one very distinct and important advantage. The procedure may be followed by non-expert and economically unsophisticated bookkeepers and accountants.

Perhaps the most astonishing feature of accounting to economists is the sudden shift from incremental value to historical cost. All accountants, businessmen and economists agree on the need for using an incremental approach for capital budgeting and new investment. The ex-

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[10] Fritz Machlup seems to be at least in partial agreement with the accountants' approach. "If the fixed resources in question had a greater value to the particular firm than to other potential users, so that the purchase price did not capitalize the full rent, then the specific rent (which would be equal to the difference between rent earned and rent paid) would be no cost element to the firm but would be a part of the surplus above normal returns." The Economics of Sellers' Competition (Baltimore: The Johns Hopkins Press, 1952), p. 253. See Chapter 8.

isting facilities form a shifting set of initial conditions from which incremental contributions from new investments are estimated. After acquistion, however, the new facility is absorbed in the environment at its cost and becomes a part of the initial conditions for the next decision. The incremental calculation is, in effect, thrown away after the decision to invest has been make and the exchange-price is used for subsequent accounting. The reasons for this behavior have been set forth earlier in this essay. It is simply not feasible to value each acquisition at its individual expected value at the time of acquisition. Different machines of the same type would be valued at different amounts that could vary widely depending on the "ordering" rule used. Moreover, due to the fact that the increments are measured from a shifting base, there can be a vast amount of overlap in incremental values so that the result need not be additive. The simplicity of the accounting structure should now be obvious. There may be long discussions among accountants about the merits of different types of costs or values, but there is little controversy over the imputation of economic rents to the non-cost factors of production.

Some writers have observed the accountant's procedures and have remarked that accountants are assigning services to agents in a manner that suggests a cost theory of value as advocated by Marx. In Marxist's animistic scheme the services of good land, equipment, etc., do not give rise to value except to the extent that they themselves lose value.

> ...the values of the means of production used up in the process are preserved, and present themselves afresh as contituent parts of the value of the product....the means of production ....give up to the product that value alone which they themselves lose as means of production.[11]

The accountant -- ideologically a long way from a Marxist -- takes a somewhat different slant. His income is an increase in value that arises from dealing with parties other than those for whom the income is being computed. Long-lived assets are assumed to yield services equal only to their cost; labor by assumption yields services equal only to its cost. Any other value added and realized by the firm is attributed to the non-cost agents -- the enterprise. In other words the economic rents yielded by the sources of services that are procured through cost transactions appear as the net income figure. These assumptions are not completely arbitrary, for such allocations follow pretty well the economic shares of the revenue stream according to the institutions of the enterprise system.

It is possible to present a slightly different approach to the cost-value problem. The asset, it may be argued, gives up its services in such a way as to expedite enterprise contributions and is thus a kind of vehicle for the exercise of managerial virtuosity. It is as if the

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[11] Karl Marx, Capital, (London: William Glaisher Limited, 1909), pp. 180, 185. An interesting speculation may arise as to the similarity of Marx's "socially necessary labor" and the accountants' penchant for putting "prudent cost" ceilings on the amounts he will capitalize or as to the similarity to the Dutch "Kostprijs" with inefficiencies not considered to be costs at all.

the factors acquired by the firm form the instruments upon which the managers play. This view may be associated with the feeling that net income should be recognized "as the contributions of the firm are rendered."[12] Depreciation, according to this view, consists in writing off the cost according to the relative services rendered to total estimated services, and while there is no necessary identification of cost and value, such an identification may be integrated in the system. Services are related to the ability of assets to serve as instruments or vehicles which are assumed to be more or less passive except for their affording opportunities for managers to perform.

The vehicular approach affords a fairly orthodox rationale of what accountants do, but it does involve a point of partial circularity. The amount of cost written off corresponds (in most cases) to the relative contribution to periodic revenues and means that the writeoff of cost depends to some extent on the contribution of cooperating factors, e.g., the contribution of the performing factors. Thus, the amount of writeoff depends in part on the size of the net income element and the size of the net income element depends in small part on the amounts of cost written off.

The net effect of the vehicle approach seems to be to assume that the vehicle (factor) contributes its cost, and that, if there is a deficiency or excess in the actual contribution over cost, the excess or deficiency by definition is the contribution of management. Inasmuch as the assumption is non-operational -- the procedure necessary to prove or disapprove it cannot be measured -- we are back to truth by definition. Nevertheless, the vehicle approach with its correlative assumptions may clear the air in one direction at least. The writeoff of the cost factor is not determined by isolated market values or by reference to its own physical contribution. The main test of an asset's expected benefit is its expected ability to let managers exercise their ability and play profitable tunes. Needless to say approximations based on time, physical units, and the like will still be with us.

In summary it should be reemphasized that the heralded shift from value accounting to cost allocation is not the dramatic shift that some accountants have apparently thought. The economic-value model implies discounted expected services. Cost allocation also implies expected services and rules for determining expired services. An assumed discount rate is not necessary for cost allocation, but the service estimates necessary for valuation except for the monetary conversion are necessary for cost distribution under the benefit approach.

It is not essential to the income-measuring process that original cost be identified with minimum value at the time of purchase or any other value. However, book value is usually the result of assigning cost according to expected benefit, and expected benefit itself is a major factor in determining value. But lest accountants exhalt in some supposed emancipation from the bogey of value, they should remember that when a service function, such as accounting, gets so far away from what users

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[12] The present writer was at one time enthusiastic about this rationalization. See for example, Inventory Valuation and Periodic Income, op. cit., pp. 35-36.

need and understand, it is time for appraisal and reexamination of underlying assumptions. Business decisions usually involve values and businessmen are rightly suspicious of esoteric terms, operational substituions, and unfamiliar constructs.

RECOGNITION REQUIREMENTS -- INCOME EARNED AND REALIZED

It is the purpose in this essay to examine the concepts of income earned and income realized and to speculate about the origins of each. It is pointed out that economists and accountants with an orientation toward economics are gravely concerned with the traditional requirements of realization and detachability. Consideration is given to the influence of bankers, who have been the chief proponents of realization requirements and who have had much more influence on the young profession than their more scholarly colleagues in the academic field.

Income is defined and measured according to rules adopted by accountants, lawyers, economists and businessmen. Income is therefore what these groups want it to be, and they want what they want because the resulting construct is thought to be useful -- to fulfill certain objectives. The following plaintive statement of Canning shows the usual misunderstanding. "And what is set out as a measure of net income can never be supposed to be a fact in any sense at all except that it is the figure that results when the accountant has finished applying the procedure which he adopts."[1] The profession has been taken to task about its lack of uniformity in this regard and in other respects, but such problems often look more simple to those on the outside, and the difficulties of single-purpose reports are real indeed.[2] Regardless , however, of the disagreements about the concept to be measured and the relative importance of the uses to which it is to be put, the problem of income earned -- broadly interpreted -- must be met and the problem of income realized calls for attention.

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[1] John B. Canning, The Economics of Accountancy (New York: Ronald Press Company, 1929), pp. 98-99. Notice, however, that there is no reason why net income should be a "fact in any sense." It is possible to have an operational definition that defines income as the result of applying any rules of measurement - even ridiculous ones. The simplification that there is no purpose or objective to the construct is certainly unwarranted.

[2] Some of the frustration with single-purpose statements is expressed by Greer. "...how much is left to the owners in the way of a money return. This may not be the only thing that people want to know about the business, but it is one important thing..." Howard C. Greer, "Depreciation and the Price Level, A Symposium," The Accounting Review, April, 1948, p. 130. It should be obvious that one figure cannot be used for all decisions. "Isn't this [orthodox income measurement] somewhat like saying, 'our measure of income is correct, but the business manager who relies on its accuracy in determining dividend policy may be sorry?'" D. A. Fergusson, "Accounting and the Price Level," The Accounting Review, October, 1954, p. 641.

To define earned and to set forth rules for determining when the earning is to be recognized are difficult problems of temporal imputation. The definition of earned is usually related to value increases, and it may be more acceptable terminology to abandoned 'earned' with its usual connotation of deserved and meritorious in favor of the less slanted term 'value increase.' Some accountants and law makers still associate earned income with the ethical concept of deserved or merited.

For practical purposes the term 'income earned' may be taken to mean that the value has been added, i.e., that the value increase has taken place. It is at this point that accountants and economist have one of their most heated disagreements. Almost invariably economists insist that value increases should be taken up as profit as soon as the evidence is adequate to support a judgment. Paton at one time certainly held to this view. "The liberal view that, ideally, all bona fide value changes in either direction, from whatever cause, should be reflected in the accounts has been adopted without argument."[3]

The application of no other test except that of value increase to support recognition leads to some interesting accounting results. Suppose, to give an example, that a corporation is formed to produce the requirements for a single government order. Suppose further that the place to exercise astute ability is in bidding and getting the order on favorable terms and that the manufacture of the necessary items is a hack production job that could just as well be sublet to any number of concerns. It is not unreasonable to maintain that the value is added at the time the master or prime contract is procured on favorable terms and that the income should be taken up at that time. Before the orthodox

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[3] W. A. Paton, Accounting Theory (New York: Ronald Press Company, 1922), p. vii. Apparently the realization test was once relatively less important among accountants. "A review of accounting, legal and economic writing, suggests that the realization postulate was not accepted prior to the First World War. In 1913 leading authorities in all these fields in England and America seemed to agree on the 'increase in net worth' concept of income..." George O. May, "Business Income," The Accountant, September 30, 1950, p. 316. Notice however: "The accountant is very likely to have in connection with this kind of profits [gains on real estate] the same opinion as the average lawyer has about all kinds of gains." Paul-Joseph Esquerré, The Applied Theory of Accounts (New York: Ronald Press Company, 1914), p. 229. Hatfield apparently was not enthusiastic about the realization postulate. "...the frequently recurring confusion...between assets and the credit side of the balance sheet. The assets can not be distinguished as being this capital and that profit....Hence as Mr. Ernest Cooper has pointed out, the question as to whether the profits are liquid or not cannot legitimately be raised." Henry Rand Hatfield, Accounting: Its Principles and Problems (New York: D. Appleton-Century Company, Incorporated, 1927), p. 286. Charles E. Hughes (252 U.S. 195) states, "It is the essence of income that it be realized...Income necessarily implies separation and realization."

are horrified, they should notice that a properly functioning stock market would recognize that value has been added, and the value of the stock could be expected to reflect the favorable change in prospects. In this case we have evidence rendered by outsiders (professional investors) who are willing to back their own judgment by investment, and there is no longer any excuse for accountants to refuse to recognize income because they are uncertain. Uncertainty about the increase or the amount of the increase is an important consideration for determining whether the value change has taken place - whether the income has been earned - but contrary to popular belief uncertainty has a much smaller part to play in determining whether the income has been realized.

To change the illustration, suppose that no gain is taken up at the time the contract is granted and no funds are to change hands until the project is completed and approved. The purchaser employs his own engineers to inspect the work continuously and to approve the work at specified stages of construction so that it is not possible for the builder to stray too far from plans. At the end of the accounting period approximately one-half of the construction work has been completed as evidenced by costs incurred to date compared with total expected costs to be incurred. Would a substantial number of accountants recognize a part of the total expected income at this time? This is, of course, the percentage-of-completion problem in its simplest form without complications regarding the availability of funds.

In this case the sale has been made, but in a similar fashion the sale (in the sense of agreement with outsiders) was made in the earlier example when the firm contract was let to responsible parties. Some may object that no sale has been made when a mutually unperformed contract is signed. This illustration points up the misunderstanding of the function of sales in the income problem. Although the goods have not been delivered, the bargained exchange price has been set by a deal between two parties with adverse interests. That is to say, the amount of the deal has been set at least tentatively by the parties, and one of them is an outsider and therefore presumably less susceptible to manipulation. The contract also resembles a sale in that the sales effort has already been applied and the critical problem of disposal has been met and solved. It is true that more uncertainty may remain than would be present in the usual sales transaction. When goods are stocked the uncertainty arises in estimating the price at which they may be sold, and the uncertainty does not disappear until sale, or in many cases until collection is made. In a contract of this sort the amount of the sale is known or approximately determined, and the uncertainty lies in how much cost will be necessary to satisfy the buyer. To most non-accountants the "crucial" aspect of the sales event is probably the evidence for value added.[4]

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[4] I have discussed the sales basis of income recognition elsewhere. "The introduction of the sales event for the recognition of value increase holds off the recognition of accounting profit until there is no doubt that the change is present and its amount ascertainable. Moreover, it conforms somewhat unsatisfactorily to the demands of those who wish to

We may now ask what effect the moving of the work to completion has on the income recognizing process. It seems that as work progresses toward completion uncertainty as to the expected total cost and total profit should decrease. While this assumed progress toward less uncertainty need not be universal, the tendency is likely to be present. However, the influence of uncertainty on accounting records may not be so great as is sometimes thought. Now and then the course of future events is so uncertain that neither management nor the accountant has any judgment worth recording, but usually uncertainty tends to decrease so that adjustments and corrections can be made with some confidence at later dates. If accountants waited until they were certain before recognizing gains or losses, interim reports before the demise of the firm might well be non-existent. Uncertainty can be a universal excuse for doing nothing unless levels of subjective confidence are established and evidential events are specified.

An important argument for value added as work progresses is that the payments that have been made to the date of the report will not have to be repeated, and should (unless they represent outright loss) decrease the total future payments and therefore increase the value of the project. A purchaser of the firm at this point would see a decreased annuity of future outpayments with the prospect of receipts growing nearer. Of course such a purchaser would be getting less working capital or more liabilities (or a combination of the two) equal to the increase in cost of work in progress. Thus, the contract itself becomes more valuable as it reaches completion, but whether or not the value of the entire firm (with only the one contract) increases more than the amount of the expenditures and an interest factor is open to doubt.

If percentage of completion is recognized on a time basis (i.e., to date one-half of the expected total time has elapsed regardless of costs) the primary consideration would seem to be the nearness of the receipt, and the interest factor would seem to be the primary influence giving rise to value added. If the earning rate is much larger (or smaller) than the interest rate, a lump sum gain or loss could be imputed and appear at some time or another - perhaps when the contract is let.

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connect the amount of profit with available funds, as the sales event ordinarily implies the receipt of cash or a claim which can shortly be converted into cash. The position of the defenders of income recognition at the point of sale is therefore one of compromise. It is probable that waiting until the time of sale will set up a lag between the points in time when the services of the enterprise are added (income earned) and those at which the increases are recognized -- to this extent it falls short of the results secured by the use of current replacement prices. On the other hand, the receipt of cash does not mean that the management has complete dominion over its disbursement -- to this extent it falls short of giving an income figure which is an index of disposable funds and fails to satisfy completely the demands of those who have interpreted the two as being equivalent amounts." Inventory Valuation and Periodic Income (New York: Ronald Press Company, 1942), pp. 8, 9.

The usual assumption -- which is one of the weakest alternatives -- is that the value is added as the work progresses in terms of costs incurred to date to expected total costs for the project.[5] Is there anything about the act of incurring costs that leads to value added in excess of the cost incurred? In general a negative answer is indicated. If we assume that costs are vehicles for managerial contribution, we may make a shadow of a case for this method of recognizing profit, but it should be clear that one of the weaknesses of the vehicular approach is that there are other ways in which management may make a contribution and add value. For example, it has been pointed out, and should be emphasized again, that management may make ~~the most~~ a more substantial contribution (add more value) in getting the contract than in combining the factors of production at low cost. There are other means for managers to show their shrewdness than in factor combination.

If, however, the value is added and managers do make their contribution to production in the narrow sense of combining factors at low cost, then such savings may account for the expected profit, and it may makes sense to say that value is added -- and income is earned -- as the factors are combined efficiently. In this case a measure of the extent of efficient factor combination may be the costs to date compared with total expected costs for the entire contract.[6] It is in this area that a defense can be made for recognizing income as the work progresses toward completion.

At this time it may be profitable to digress for a brief discussion of the accountant's strong distinction between savings and earnings. Accountants have made a sharp distinction between the two, but it is contended here that the distinction is one of realization and

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[5] "In view of the fact that the problem is one of asset valuation and income, rather than extent of time or physical volume, it seems clear that a cost percentage is the appropriate measure and that a computation based upon total cost is more significant than one that considers only certain elements of cost...The crux of the matter is the basis for the estimate, and no satisfactory substitute for a comprehensive cost percentage has as yet been proposed from any quarter." William A. Paton and William A. Paton, Jr., Asset Accounting (New York: The Macmillan Co., 1952), p. 99. This statement is based on the implicit assumption that value added and income are in fact proportional to costs incurred and clearly begs the question.

[6] W. A. Paton and A. C. Littleton hold: "Revenue is earned by the entire process of operation, by the totality of business effort..." but hedge slightly in a later statement which is an exercise for the semanticist: "Revenue as the price-aggregates of output sold does not appear full-fledged until the product is completed and the selling price determined by actual sale. Yet it may be reasoned that, in a certain sense revenue is 'earned' during the entire process of operation reflected in the accumulation of costs assignable to product." An Introduction to Corporate Accounting Standards (Chicago: American Accounting Association, 1940), pp. 46, 48.

not of earning. The statements of Paton and Littleton are representative.

> Such discounts for prompt payment are associated with the process of buying, the process of incurring cost in the initial stage, and to recognize revenue at this point amounts to sheer anticipation, an extreme case of booking unrealized income....The answer is that cost savings are in no sense revenue. If the business buys well, costs are simply on a lower level than would otherwise be the case. The special efficiency or luck associated with buying, it is true, will have a bearing on the amount of net income eventually earned, but demonstration of the level of earning power awaits future events.
>
> It should be pointed out, too, that it is very easy for the buyer to assume that an extraordinary bargain has been made when no such assumption is warranted. The only reasonable assumption is that buyer and seller are equally well-informed, equally desirous of trading, and equally strong in negotiation. This assumption may not square exactly with underlying conditions in many cases, but it is more useful than an approach which would permit both buyer and seller to introduce purely subjective valuations not validated by the actual terms agreed upon.[7]

It goes without saying that any gains to be derived from lucky buys and paying bills without penalty do not meet the usual definition for realized income, but the pertinent question here is whether these gains might qualify for income earned. Can there be any doubt that management often contributes value by acquiring assets as well as in combining them and unloading the finished product? Is there doubt that value can be added at the time assets are acquired and the costs incurred? Suppose, to illustrate, that a new concern with no other interests spends its entire amount of assets for government surplus goods at fabulously low prices. Immediately after the acquisition and presumably due to the purchase there are firm offers for the stock of the concern at twice the amounts recently paid in. Thus, there is no question about the qua~~nt~~lity of the evidence to support the fact that value has been added. The conclusion is that accountants hold off recognition because of failure to meet the test of realization and not because the evidence is inadequate. As will be pointed out later, the defense for omission of these gains is not always convincing, and, as MacNeal and many others have pointed out, the practical consequences may be ghastly.[8] Moreover, it is not necessary to assume that buyers and sellers are equally "informed", "desirous," and "strong" in order to defend the failure to recognize income until the value increase has met the tests of realization.

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[7] Ibid., p. 64. The semanticist will wish to find whether the horizons for establishing "anticipation" and realization have been specified.

[8] The reader may wish to refresh his memory by reading MacNeal's famous illustrations including his two investment trusts. Kenneth MacNeal, Truth in Accounting (Philadelphia: University of Pennsylvania Press, 1939), Chapters 1, 2, 3.

Suppose, to return to the original illustration with only one contract in process, that instead of a lump-sum payment upon final approval of the work there are advances by the buyer at various approved stages of construction. Immediately the concept of realization (liquidity) is involved and at various points the value may have been added and the increase may be in the form of liquid assets. If there is a holdback on work approved, care must be exercised, because the holdback receivable may not be current, and it is the contention of this essay that the realization construct is concerned entirely and exclusively with liquidity. At a later point we will consider whether realization implies that all of the cost of the work in addition to the profit increment must be converted into a current asset or whether just the increment need be subjected to the current test.

Realization

To many accountants one of the major mysteries about the profession is that auditing, as an important independent service, did not develop earlier than it did. To present-day businessmen it is inconceivable that a rational lender would grant credit to an applicant without asking someone in whom the lender had faith to size up the general financial position of the applicant and render a report. The prospective lender might insist that the financial position of the applicant be at least as good as the investigator reported.[9] The fact that the investigator's compensation came from the lending institution may have been an important early factor in instilling the dogma of conservation in the accounting profession. It is obvious that lenders were (and are) interested in expected future current funds -- working capital -- from which the loan can be repaid. The dangers from reporting income unless current assets are available for at least the amount of the value increase is obvious. Owners may or may not wish to withdraw assets equal to the reported income, but the measure of income is traditionally associated with amounts that can be withdrawn, and the construct itself is usually related to excesses that are not needed to preserve the integrity of capital in some sense.

Thus the accounting profession has been subjected to conflicting forces and demands. Economists have tended to assume that income is management's chief concern and that management has only minor financial problems and have long been enemies of the realization concept. In general, economists have simply not admitted that the realization concept

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[9] "The owner was not deceived because he knew his business intimately. The banker and trade creditors disregarded all balance-sheet values except those for current assets and rested secure in the knowledge that these assets were worth at least as much as represented and perhaps a great deal more." Kenneth MacNeal, "What's Wrong with Accounting II," The Nation, October 14, 1939, p. 410.

is necessary.[10] Lenders, on the other hand, have insisted on realization tests and have had little interest in measures of income not supported by current assets. The latter group has been so convincing that many accountants still are reluctant to show acknowledged increase in value even as footnotes. There is, of course, no reason why both groups cannot be satisfied.[11]

Arguments in this area are similar to others in the field of accounting in that they are about definitions. The important question is whether we do or do not want to build liquidity requirements into our definition of income. There is no limit to the number and variety of definitions that *might be* adopted by the profession. The question should then be discussed in terms of the needs and objectives of those who are considered to be worthy of information. Everyone admits that strong rules must be applied to the evidentiary aspects of income recognition. The tendency to consider detachability (liquidity) as a determinant of income measurement (and therefore as a part of the definition of income) is widespread among accountants and finds its most rigid supporters among the advocates of LIFO and base-stock methods of inventory valuation.[12]

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[10] While economists may not have had very much influence on accountants and the course of accounting theory, it seems that accounting has not had very much influence on economics. "Scientific accountancy has now been developing for some fifty years, but I cannot trace that it has made a single substantial contribution to economic science over its own field of analysis of the results of industry, although it has practically a monopoly grip of the required data." Statement of Lord Stamp in 1921, quoted from Mary E. Murphy, "Book Review of *Precision and Design in Accountancy*," *The Accounting Review*, July, 1949, p. 334. Allocation of fault is not necessary or perhaps even desirable, but notice the following statement from W. Stanley Jevons: "There is not a clerk nor bookkeeper in the country who is not engaged in recording numerical facts for the economist." *The Theory of Political Economy* (2d ed.; London: Macmillan and Company, Ltd., 1879), p. 11. Quoted from John Wheeler, *Handbook of Modern Accounting Theory*, ed. Morton Backer (New York: Prentice Hall, Inc., 1955), p. 48.

[11] Accountants may be on the threshold of wide use of the "have-your cake-and-eat-it-too" approach that has been applied so widely in accounting for appraisals. Recognition of value increases does not necessarily imply recognition of income nor does it imply the defenseless assertions given in Chapter 9 of *Accounting Research Bulletin* No. 43: Restatement and Revision of Accounting Research Bulletins, Issued by the Committee on Accounting Procedure (New York: American Insitute of Accountants, 1953).

[12] "The conclusion seems to be that the income to be reported as the basis for possible distribution should be limited to that share of bookkeeping return which is appropriable and consumable..." R.G. Walker, "The Base-Stock-Principle in Income Accounting," *Harvard Business Review*, Autumn 1936, p. 85.

"Profits in accounting is a disposable surplus, that is dis-

The accountant's emphasis on realizability - value increase in terms of working capital availability -- is recognition that his work should help management administer its dividend and working capital problems. However, it is also recognized that modifying the definition of income is only one method of aiding management in this area. Appropriations of retained earnings may be utilized for a similar purpose, and it is generally recognized that income definition in terms of realization is not a necessary requirement for successful working capital management.[13] Nevertheless, the main body of accounting doctrine holds that the recognition of income should be deferred until the receipt of a current asset or even cash. For some accountants long-term claims that are discountable are sufficient, and gains on exchanges of fixed assets are recognized as one of the extremely rare violations of the rule. Sinking fund earnings are another minor exception.

A few accountants and auditors have tended to use the term "realization" loosely and to confuse its function with the problem of es-

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posable within a period. If profits could be paid away in the form of stock-in-trade there would be little problem involved....On the other hand the relationship of profit to the cash which will be used for its disposal governs our view, and any profit not arising from an actual sale will be left out of the computation, not because it is not real profit, but because it cannot be detached for distribution." P. Taggart, "Stock-in-Trade 'Valuation'," The Accountant, May 18, 1935, p. 726. (Note Taggart's implied distinction between "real" and reported profit.)

"For the accountant profit is largely bound up with questions concerning its distribution, with the consequence that he places the emphasis on its realization in terms of cash or its equivalent...." F. Sewell Bray, "Recent British Accounting Developments," The Accounting Review, April, 1946, p. 203.

There is naturally considerable authority for the opposing view. "No profit and loss statement, however, should stress a distinction between realized and unrealized profits..." Kenneth MacNeal, Truth in Accounting, op. cit., p. 300.

"The distributability test for income recognition is obviously an unfeasible one; accounting has enough problems of its own without the attempt to apply standards of financial administration to the reporting of financial events." William J. Vatter, The Fund Theory of Accounting and Its Implications for Financial Reports, op. cit., p. 38.

[13] "Earned and realized income is not necessarily distributable income; a distinction should be drawn between income performance and income administration." W. A. Paton, Advanced Accounting (New York: The Macmillan Company, 1948), p. 453. This semantic distinction which tends to beg the question is expanded in an article by Rufus Wixon, "The Measurement and Administration of Income," The Accounting Review, April, 1949, pp. 184-190.

tablishing evidence to support the value increase.[14] Opinion of management, even when supported by independent expert appraisal, is ordinarily not considered to be adequate evidence to support value increases. Evidence derived from arms'-length dealing with outsiders is ordinarily accepted under our present legal institutions, but in case of obvious stupidity on the buyer's side some doubt may arise. Market prices for investments and inventories are often available and are objective in the sense of being able to meet the social-consensus test. Often responsible offers are available for real and personal property, and these offers are relevant to the judgment process. Recent transfers of similar or related properties may be admitted as evidence. Independent appraisers make use of some or all of the above indicators to render professional and reasonably unbiased opinions. Finally, the representation of management as to value changes may be based on intimate and specialized knowledge and may therefore be especially useful.

Some accountants do not wish to recognize income unless quick assets have been increased. LIFO accountants, for example, argue that an increase in inventory is not sufficient to support a realized gain. Inventories are, by most definitions, current assets, but they still must "be sold" -- undergo further effort. It is difficult to determine whether the LIFO feeling that inventory increases are not adequate is due to the assumption that the evidence of value increase is unsatisfactory or whether inventories do not qualify as being current enough. From the formative years of accounting there has been considerable support for not including inventories among the current assets.[15] If realized means that the owners can withdraw the amount of income without becoming financially embarassed, then inventory increases may fail to qualify as adequate support for realization. The evidential angle is probably not so important at this point. Some land, for example, may be traded at arm's length for stock in trade with an unquestioned value increase. Some accountants are willing to accept the evidence and insist that an inventory increase is current enough to support income recognition. Those who reject the immediate recognition of profit may do so on the basis of inadequate evidence (unlikely with the assumption given) or on the grounds that the increase is not sufficiently current.

In manufacturing it is common to transfer some of the building cost to inventories. A part of the building cost is now considered to meet the definitional requirements for a current asset, and revenues ex-

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[14] "Realization, as I understand it, is a set of rules devised as a guide in determining when the quality of the evidence with respect to prospective net revenues is such that they may be directly valued as an element of the firm's financial position." Charles E. Johnson, "Inventory Valuation - the Accountant's Achilles Heel," The Accounting Review, January, 1954, p. 16.

[15] This has been the position of defenders of base stock and to some extent the advocates of the later-day version (LIFO). Yet others who were not interested particularly in the base-stock argument looked on inventories as non-current assets. See for example, Paul-Joseph Esquerre, who included them with stationery and printing in a working-asset section of the financial position report. Op. cit., p. 408.

pected in the next period are assumed to be adequate to cover the amount severed from the building cost. Interestingly enough few accountants argue for the recognition of income at this point. Again their failure to do so may be for either or both of the two reasons -- evidence unsatisfactory or asset not current enough.[16]

We may now inquire about increases in the value of marketable securities that are not owned for control purposes and are quoted on a major exchange. Do increases here qualify as realized income? If not, is the rejection due to lack of evidence? Lack of working capital increase? Or from fear of showing increases so long as there is any substantial probability that they will be wiped away before owners can withdraw or spend the proceeds? The evidence of bona fide quotations and the ready operation of an organized exchange is certainly sufficient to support an increase in the eyes of most non-accountants and quite a few professional accountants.[17] Here the sales act is not crucial in any sense, for the effort of making the sale is not important, and there is little or no reason to believe that the securities cannot be transferred.

In general, it must be concluded that increases in market value of such securities are realized gains whether the stocks are sold or not. The evidence of increase is adequate for all but the most skeptical, and the increase is in a form that can be detached from the business without interfering with its operations.[18]

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[16] There is an extreme offshoot of the evidence-inadequate approach that merits attention - the terror theory. The evidence may be admitted as adequate for present conditions, but something might happen before the owners can get their hands firmly on the increase. This milquetoast approach requires evidence in the form of cash and is concerned with the possibility that even the cash may be lost.

[17] If the holding is a large block, it is possible that an attempt to feed the securities into the market at a rapid rate will break the price. If the holdings are large enough for this possibility, there may be some doubt that the investment should be treated as a current asset. The doubt arises with regard to the validity of the evidence.

[18] Most textbooks -- especially those that lead in sales and are therefore important in shaping the thought of young accountants -- do not agree. The supporting reasons are usually not given, but, when given, they make interesting reading. For example: "Since temporary investments in securities are current assets, they should be valued at the lower of cost or market for balance sheet purposes." (No support given.) H. A. Finney and Herbert E. Miller, Principles of Accounting Intermediate (New York: Prentice-Hall, Inc., 1951), p. 518. Perhaps the Patons are nearest to taking such value increases as income. "Accordingly when the value of listed bonds held has either fallen or risen materially below or above the recorded amount on the investor's books it is not only allowable but desirable to take notice of this condition in the investor's records and statements. The least that should be done is the showing of

Let us now return to the question as to whether the concept of realization as working capital availability is necessary or even desirable in a modern business economy with production carried on chiefly through large industrial and trading aggregations with widely separated management and ownership.

It may be argued that attempts on the part of the accounting staff to aid management manipulate its working capital are unnecessary or, at least, of so little consequence that they are not worth retaining at the sacrifice of other advantages. In small businesses owners and managers are often essentially salesmen or production men and have little knowledge of finance or of elementary financial matters. Many lean of their bankers for advice in this field, and bankers sometimes solicit the aid of the accounting profession by asking for the realization test of income recognition. It may be contended that even small businesses today have the advice of public accounting men who are competent and willing to give advice on financial matters. Certainly large corporations have managers who with the aid of treasurers, independent accountants, investment bankers and commercial bankers are competent to manage financial matters.[19] In view of this tendency the profession would do well to examine the sacrifices necessary to cling to the realization concept.

Perhaps the strongest statement is that of Vatter. "The timing of speculative gains on the criterion of 'realization' is simply wrong so far as the investor is concerned."[20] MacNeal (infra) is vitally con-

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market value in parenthesis or by footnote in the statement of financial position, coupled with appropriate notations on the underlying records. ...As noted in an earlier connection, such a procedure doesn't mean treating an increase in value as realized income, and likewise it does not -- necessarily -- require the charging of an accrued loss to revenue In extreme cases it may be desirable to go further, and recognize market values as a new basis of accountability, with the historical cost data placed in the subordinate position." William A. Paton and William A. Paton, Jr., Asset Accounting (New York: The Macmillan Company, 1952), pp. 167, 168.

[19] How many investors and prospective investors, it is asked, spend any substantial time checking the working capital position and trends of a well situated company? Working capital deficiencies may be symptoms of lack of ability somewhere else in the management area, but it is doubtful if many investors spend much time checking the working capital position of, say, General Motors. Small businesses with unproved managers may on the other hand merit hours of concentrated study in the working capital area. It is obvious however that a satisfactory income does not assure solvency. "Over a relatively short period of time...profitability and solvency are almost independent of each other, sometimes almost antagonistic goals." Maurice Moonitz, op. cit., p. 376. Kenneth E. Boulding is extremely critical of the view of most economists that businessmen have few if any problems of solvency. See A Reconstruction of Economics (New York: John Wiley & Sons, Inc., 1950).

[20] William J. Vatter, op. cit., p. 34.

cerned with failure to disclose important financial information and points out the tremendous possibilities for manipulation by insiders who may decide whether to make a value increase public information or not by skirting around the concept of realization. Management does have considerable freedom in which to manipulate, but the area of freedom in this direction, it is generally agreed, should be supervised if not constricted. Capital gains may in times of rapidly changing price levels be more important than ordinary operating gains, and with the current possibilities for sale-lease-back agreements, changes in current values of hopelessly committed assets are no longer a matter of indifference to be reported or not reported at the whim of the accountant. Moreover, in line with modern technology, which requires tremendous aggregates of capital, the amount of assets held by business concern is no longer unimportant when related to operating revenues and income. The possibilities of capital gains and losses are greater, and of course many firms are now organized with such gains in mind.

From the viewpoint of the investor in a large concern a strong case can be made for abandoning the disadvantages of the realization test and placing more trust in the financial ability of owners and managers. The opposing view is taken by many accountants including defenders of LIFO. These advocates hold to the detachability doctrine and insist that the traditional procedures tend to violate the informational rights of both management and investors. It is contended that to report as income value increases that can be severed from the firm only if major policy changes in financing or partial abandonment are made, serves little or no useful investment purpose. Moreover, managers may understand fully the situation and have the necessary restraint in ordinary circumstances, but there may be such pressure from more or less uninformed investors that management is forced to acquiesce in spite of its best judgment.

Perhaps the controversy is not so serious as it seems. Regardless of which position is held, the primary objective appears to be adequate disclosure of pertinent facts. Income may be defined in terms of value increases without completely disregarding the realization concept. Reported figures can be supplemented with copious notes that tell the reader why he may not expect to receive dividends equal to the amount of the reported income.

At the other extreme, accountants may hew to a careful line for realization and take what is essentially the LIFO position for inventories and plant assets. In this case, he reports income only if it has met extreme tests for realization, but he also gives extensive notes to indicate the existence of value increases that have not yet met the tests for realization. If disclosure is reasonably adequate, the reader may reach his own conclusion as to whether he probably will be able to cash in on the increases.

The question cannot be resolved by references to income determination and to something else called income administration. The problem is naked enough -- which way should income be defined and supplemented to meet best the requirements of a modern economy. The tremendous burden of corporate (and individual) income taxes means that accountants should ap-

proach with care any definition of income that does not consider the necessity for funds to pay the resulting tax. In fact, it may be argued that an income tax, at the current rate practically forces accountants to cling to the realization postulate. Borrowing on the increase for dividend payments is a possibility, but this financial device has definite limitations.

There is a related problem of some interest: if we are to hold to realization, is it necessary for all the cost including the increase to touch first base -- cash or equivalent -- or is it sufficient for only the amount of the increase to meet this test?

One view is expressed in the following quotation.

> An expenditure for wages was charged to the revenue account at that time, not because it represented a periodic expense to be matched against the income which it produced but because it represented a loss of circulating capital which had to be replaced before there were profits available for dividends.[21]

If inventory is sold for current assets with a recognizable value increase, the increase could be detached in the sense of supporting a dividend without changing the working capital position of the firm except perhaps changing the basic amount from inventories to receivables. Suppose that a fixed asset is exchanged for a fixed asset of equal value plus cash for the amount of the acknowledged value increase. In this case, it appears that the amount of the increase could be detached without impairing working capital.[22] If, however, inventory items are given for a fixed asset and there is an obvious value increase, the working capital decrease (according to usual definitions) has been for the entire amount of the value recognized for the inventory. If dividends to the amount of the increase are paid from working capital, the total ~~in~~decrease in working capital is the amount of value recognized for the fixed asset.

The fluidity of the entire proceeds may be used as a criterion of income recognition. Now the "ability to shift investment" does not necessarily imply that the entire amount of revenue must be represented by working capital. It is, of course, possible to argue for such a criterion and such a definition, but even traditional accountants seldom

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[21] D. A. Litherland, "Fixed Asset Replacement a Half Century Ago," The Accounting Review, October, 1951, p. 478. Notice the turn to management freedom in the following quotation from Maurice Moonitz. "...the emergence of revenues restores a business to a liquid position, thereby permitting management to shift, if necessary, the precise form of the investment." "Adaptations to Price-Level Changes," The Accounting Review, April, 1948, p. 141.

[22] Provisions of the income tax law and regulations recognize the working-capital characteristics of fixed asset exchanges and make complicated provisions for relating the taxable income to the amount of the "boot."

insist on complete fluidity. A straight swap of a fixed asset for another fixed asset plus some boot in the form of working capital presents the opportunity for the decision to shift or not to shift the cost commitment from one bundle of services to another and provides considerable freedom with respect to the increment. If is the increment that has the additional dimensions of withdrawal and tax, and therefore it seems to be more critical in the area of liquidity.

REALIZATION DIFFICULTIES - DIVIDENDS

In a preceding essay the controversy about the realization concept is discussed in some detail. The merits of the straight value-increase approach are substantial, but realization in both its evidential and working capital aspects will no doubt be with the accounting profession for some time. This essay deals with the realization problem in connection with withdrawals and with some simple equity reorganizations within a corporate structure. Under what circumstances, for example, are stock dividends earned and realized to the recipient? When are cash dividends earned or realized? In this connection some references is made to the voluminous income-tax literature.

The dividend question is obviously a part of the larger problem of inter-entity transactions. Attitudes about realization tests will be conditioned in each case by the individual's own concept of the proper accounting entity and its relationship to other entities. There is little doubt in most of our minds that the word entity got off on the wrong foot by long metaphysical discussions as to whether the entity is "real or imaginary," or is a "fiction."[1]

It should be clear that informational reports must be relevant to individuals -- to people -- and to their needs, their interests and desires. This attitude does not deny the continued existence of such

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[1] Kell has no illusions about this point:

> ...a seemingly endless controversy has ensued over the entirely irrelevant question of whether the corporate accounting entity is based on fact or whether it is based on fiction.

"Should the Accounting Entity be Personified?" The Accounting Review, January, 1953, p. 40. Canning uses semantic arguments effectively in the controversy. "Imaginary entities have their proper place in the conceptual world of analysis in pure mathematics, but never in the statistical analysis of realities." John B. Canning, The Economics of Accountancy (New York: Ronald Press Company, 1929), p. 55. Husband points out the "artificial" nature of entity but does not let it interfere with his analysis and conclusions. "It is recognized, of course, that the corporate entity is a fiction, an artificial personality, that it lacks objective reality, and that it possesses no power to act or to direct action." George R. Husband, "The Corporate-Entity Fiction and Accounting Theory," The Accounting Review, September, 1938, p. 241. "...it becomes necessary for the fictitious business entity to account both for the kinds of goods or things making up the property in its possession and for the kinds of ownership claims attaching to these goods." Warner H. Hord, "A Neglected Area of Accounting Valuation," The Accounting Review, October, 1942, p. 337.

organizational entities as the American Accounting Association, Notre Dame football team, the Northwest Mounted Police, The Chrysler Corporation, or the Commonwealth of Virginia. Such organizational entities not only exist -- in the sense of influencing conduct and creating emotional response -- but such entities are conducted by individuals whose work is directed to the benefit of themselves and other vaguely determined individuals for whom the organization becomes a symbol and an understandable surrogate.

Recently in accounting there has been some discussion about the functions of modern management in terms of organizational survival instead of stockholder agency.

> Especially significant...has been the role of management -- instead of merely representing the stockholders it has become the custodian *of the enterprise objectives of survival and growth*.... the stockholders in an enterprise and their rights are subsidiary to the organization and its survival.[2]

This area is overdue for serious consideration, even though discussions of managements' duties and responsibilities have been going on for some time. If management is primarily an agent for the residual shareholders, its duties are primarily toward the shareholder group, and the proprietorship approach to accounting may be in order. One point of opposition should be noted, however; the fact that management should be responsible primarily to residual shareholders does not mean that the interests of other groups must be neglected. Nor does this position imply that accounting reports should always be aimed at the management group, although improved administration usually benefits all groups with legitimate interests in the organization. It is conceivable, therefore, that an entity or fund approach would be more useful to owners than the owner-oriented proprietorship assumption.

Husband, who has given considerable attention to the entity problem apparently has taken the general view that management is directed primarily to stockholder interests and that accountants should be oriented toward an entity-for-management view.

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[2] Waino W. Suojanen, "Accounting Theory and the Large Corporation," *The Accounting Review*, July, 1954, p. 393, 394 (Italics mine). Apparently Littleton does not stress individual human relationships. "Not all property....is capital. To be capital, property must be devoted exclusively to some business enterprise with a view of realizing profit. Capital thus set apart constitutes a business which from its beginning establishes relations between itself and all parties dealing with it. A. C. Littleton, "The Logic of Accounts," *The Accounting Review*, January, 1955, p. 45. The following recommendation is refreshing and shows more appreciation of the human beings involved. "Or, better than 'enterprise' we may say 'human association'..." John W. McMahan, "Basic Education for Accounting in Business," *The Accounting Review*, April, 1946, p. 137.

> Considerable tendency exists in current accounting to relate basic theory to the presumption that the corporation as an entity conducts its affairs for its own ends. Basic accounting problems are solved in a manner more or less consistent therewith. From the point of view of economics, however, the core principals in free enterprise activity are the individual entrepreneurs who use the various forms of business organization for personal ends.[3]

While there is something appealing about the simplicity of a doctrine that considers the major function of management to be its duties and responsibilities to shareholders, there has been a growing feeling that such a model is far too simple to represent the relationship of management to outside groups.

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[3] George R. Husband, "The Entity Concept in Accounting," The Accounting Review, October, 1954, p. 553. Notice also: "Since the locus of the entrepreneurial function rests in personal individuals rather than in impersonal business entity it would appear that accounting theory would be more realistically hinged to economic reality if the corporation were assumed to be an agency organization." Ibid., p. 554. For a stimulating view see Nelson B. Seidman. "It can hardly be doubted that in the case of the private closely held corporation, an agency relationship does, in reality, exist....But in the closely held corporation it is not that here the corporate veil has been pierced; it is that in reality (though given substance before the law) the corporate veil never existed at all....'What do we mean when we say that the corporation is an economic and social entity? We mean that the corporation as such (like other social institutions) has a tradition, a reputation, a place in the economic process and in the community....It is said that individuals run the corporation, but it can also be said that the corporation runs individuals.'" "The Determination of Stockholder Income," The Accounting Review, January, 1956, pp. 64-65. Even philosophers have recently become interested in the problem. "Above all, the administrator thinks responsibly. . . His first duty is to maintain the activities of his organization; he will improve them if he can, but he must keep them going at all costs. In this respect his professional code resembles that of the doctor whose first duty is to guard the life of his patient....So it is with the administrator; he thinks in terms of the groups he administers and of the individuals with whom he must act. He will test the value of an idea with such questions as these: 'Will it work in practice?' 'Will it benefit or hurt the organization I serve?' 'Will my colleagues go along with me?' For the administrator, in his professional capacity, a valuable idea is nothing more or less than a workable plan. He thinks practically, in terms of concrete situations. Essentially and necessarily a conservative, he welcomes cautious developments provided these lie well within the conventional, accepted framework of his society." T. North Whitehead, "Permission to think," Harvard Business Review, January-February, 1956, p. 34.

> ...management is indeed far removed from the application of neat theories of authority delegations following the lines of property rights; management is not the servant of the proprietors but rather the conciliatory agency between two or among several... groups....Viewed realistically, the corporation is a conglomeration of personalities, resources, conditions, and relationships; and this conglomeration is but faintly if at all recognized in the legal fiction of the corporate "person."[4]

Let us now look at the "organizational custodian for survival" theory of entity. Perhaps the first question is whether or not the custodians are attempting to aid the survival of the organization regardless of equity holders as individuals or as groups or classes. Is it the survival of the entity name that is important? The line of products? The jobs and welfare of individual workers or of the working population of the area? The trademarks and products with public acceptance?

While there may be several interpretations as to the meaning of survival and who is to be allowed to survive, one suspects that management is interested in its own survival and gives action to this end high priority. Thus, it seems reasonable that the bondholders and preferred holders will be paid some return if at all possible, for failure to do so constitutes a threat to management survival. Moreover, to perpetuate itself management must keep the common holders reasonably well satisfied. While the common holders may share some behavior patterns with sheep, when stirred up, they have often failed to conform to the Berle and Means pattern. Clearly, if management wishes to continue in power, it must keep common stockholders from becoming mutinous if not exactly contended. Furthermore, a management that finds it impossible to get along with

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[4] William J. Vatter, The Fund Theory of Accounting and Its Implications for Financial Reports (Chicago: University of Chicago Press, 1947), pp. 9, 10. Husband expresses the broader view, perhaps not with approval. "Instead of interest being a cost which is paid for a service, the corporation is viewed as an organizational agency earning income for the creditors, as well as for the stockholders....Further inclusion within the aggregate group of the wage earners...makes wages also a distribution of income..." George R. Husband, "The Entity Concept in Accounting," op. cit., p. 560. While income reports on the principle of value added are not new, an able defense for this organizational view is given by Waino W. Suojanen, "...if the enterprise is considered to be an institution, its operations should be assessed in terms of its contribution to the flow of output of the community....The purpose of the value added concept of enterprise income is the measurement of the flow and its division among the participants in the organization." "Accounting Theory and the Large Corporation," The Accounting Review, July, 1954, p. 395. Russell Bowers apparently does not hold the "organizational survival theory." "...a fallacious economic theory that the primary motive of a business firm is to maintain its capital in such manner as to enable the firm to perpetuate itself in business without diminishing its scale of activities." "Objections to Index Number Accounting," The Accounting Review, April, 1950, p. 151.

pertinent labor organizations usually finds itself unable to earn satisfactory profits and thereby unable to keep all equity holders satisfied. Customers offers a similar example. Certainly if management wishes to stay in power, it must have relations with these groups. Perhaps it is not by chance that the new managerial elite follows a fairly definite and predictable pattern of agreeable and impressive personalities.[5]

It is not meant to imply that the chief concern of the dominating group is always its own survival. The general team spirit that makes management want to pass on to its successors a stronger Railroad is akin to the spirit that makes the footballer willing to die for Rutgers in order to improve her miserable record over Princeton. Moreover, while survival of the name may be important, there are many examples of willingness to change names without tears.

Apparently there is little or no interest in aiding the survival of an individual stockholder or other equity holder. Individuals buy and sell securities regularly, and except in cases where individual holders are important, it is possible that the individual composition of the equity holders' ledger is a matter of no great importance to the management.

The question now arises as to the relevancy of management motivation and goals to the selection of the entity for bookkeeping purposes, and subsequently the question as to the relationship of the bookkeeping entity to the concept of realization in the field of corporate distributions -- withdrawals.

If the stockholders and their interests are subordinated to the survival of the enterprise, then it seems to follow that the agency approach to corporate relations with the owners is not an acceptable viewpoint. It should be clear that a form of management-centered entity would be appropriate for such relations. From this point of view the owners' interests, like those of laborers, are adverse (the term is Canning's) to the management group or to the organizational entity, and presumably their reward should be minimized. Just as management may try to procure borrowed funds at the most favorable rates, management may attempt to keep the payments to stock owners as low as possible without choking off the supply of new capital or losing their position.[6]

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[5] T. North Whitehead, op.cit.

[6] Husband almost comes to this decision with regard to preferred stock, but his concern with the agency approach apparently keeps him from applying the same conclusion to common. "Capital is an effective instrument contributing mightily to any success that management may achieve. For this the manager should be charged, otherwise the managerial accomplishment will not be isolated ....Consistent therewith preferred ...dividends are best treated as a cost." "The Entity Concept in Accounting," op. cit., p. 561.

The entity problem, in one sense, involves drawing a line between insiders and outsiders. Many on the outside are considered to have adverse interests to those in the inside. Managements' duty to bondholders, as outsiders, is to entice them into contracts that are most favorable to inside groups. Although preferred interests are usually included among stockholders' equities and income is usually determined from their viewpoint, management and common shareholders often consider them beyond the pale. To the extent that common holders are considered to be a part of the outside environment, policies may be designed to give them as little as is consistent with optimizing managements' overall position.

A little reflection will show that the insider-outsider analysis is far too simple for accounting theory. Even outsiders are worthy of some output from the information system. Creditors, workers, government agencies, customers and even competitors may be entitled to information. In fact, entity accountants are divided at this point. One group of theorists takes the mystical position that the entity is a separate area of accountability quite apart from the contending and cooperating groups that make its existence possible. The other branch of entity-theorists takes the association view and looks at the organization as a mechanism for resolving conflicts and furthering the interests of all relevant groups. The accounting rules may be considerably different under the two assumptions. However, it is sometimes assumed that the interests of all are well served by capable administration and management. With this assumption the two branches of entity accountants may merge in a kind of managerial accounting whose primary objective is to improve administrative efficiency. We are still shouldered with the old, old problem: efficiency in accomplishing whose objectives.[7]

This problem of entity definition is given more attention than it would normally receive because of current attitudes in corporation finance. It is now common practice to specify the chief responsibility of management in terms of maximizing the current value of the residual stockholders' equity under conditions of uncertainty. This assumption is a fantastic over-simplification and is subject to its own special difficulties. The necessity for recognizing peculiarities of market behavior is obvious, and the problem of dynamic programming arises.

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[7] William J. Vatter has partially brushed aside this question in his interesting fund theory. Assets are segregated for some purposes and the bookkeeping definitions are clustered about assets and restrictions that apply to assets. The Fund Theory of Accounting and Its Implications for Financial Reports (Chicago: University of Chicago Press, 1947), p. 19. Paradoxically, Vatter's condemnation of the entity approach contains one of its most competent statements of defense. Jacob Marschak and some behavioral scientists have used the word "team" in a similar way to indicate common interests.

Moreover, if stockholders of the future are different from present ones, and if the switch intervals are not known, the problem becomes highly complicated. Actually problems arise at a much more elementary level. For example, a stockholder wishes to retire and the firm buys his interest as treasury stock. Is it the obligation of management to see that the retiring stockholder receives optimal treatment even at the expense of other current holders or of future stockholders to whom the shares may be sold?

Moreover, it is now fashionable to adapt a set of measurement rules for costs of capital that defines the construct in terms of cost (sacrifice) to residual owners. A number of questions clamor for attention. What is known about feasible alternatives (opportunity costs) available to each stockholder? What is known about individual stockholders' desire for more risk or less risk implied by more or less trading on creditor equity? What about differences in the rates on withdrawals among individuals and modes of withdrawal? Why should one measure sacrifice by means of an implied cost derived from marginal buyers and marginal sellers in a market?[8]

The current position in corporation finance seems to be reasonably close to the original proprietary approach of early accountants. Yet it should be clear that accountants deal with many organizations without stockholders, residual or otherwise. Hospitals, school districts, cities, counties, states, clubs and many other organizations require accounting information. The construction of a theory of accounting must accordingly be more general and be based on information in relation to the varying needs of diverse groups with shifting social worthiness.

Let us now apply these various entity assumptions to the question of income realization to recipients of corporation dividends. The preliminary discussion begins with another look at cash and other property distributions.

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[8] Perhaps the market price represents some sort of average feeling with some potential buyers willing to pay less and some potential sellers wanting more. Such arbitrary positioning of market price on the curves is highly questionable, and the rules of measurement for cost of capital do not specify cost to some average investor. Notice that an average rate derived from using bond rates, preferred returns and common market rates is an average of different interests. If each were exactly arbitraged by the market, the average still might not represent the feeling of the residual holders. Interesting side issues on cost-of-capital measurement may be raised. What, for example, is the "cost" of additional common capital to bond holders? Is there a "cost" to existing bondholders when new bonds are sold? Preferred retired? What is the cost to management of retained earnings, if shareholders would rather have "growth" instead of dividends? Managers get the benefit from more earning assets without being charged an explicit cost for the use of the funds when retained earnings are utilized. This peculiar effect is the result of the accounting tradition for recording only explicit costs.

From a strict agency relationship it should be obvious that cash dividends are not income to the recipients at the time of declaration or payment. The owners, with this view, have interests in the assets of the concern before the distribution is made, and after the distribution the owners have undivided interests in a smaller amount of corporation assets (by the amount of the distribution) and have an equivalent amount of assets in their own individual pockets. To illustrate, assume that a cash distribution of $100,000 is made to the five stockholders of the corporation. After the dividend each stockholder has $20,000 and a one-fifth interest in a corporation whose net assets are decreased by $100,000 by the dividend action.[9]

We may inquire next whether the concept of realization is useful if this association or agency assumption is deemed to be appropriate. A negative answer seems warranted. From the more or less continuous flow of financial and operating events that make up a firm's existence the accountant may select with relative freedom those that are to be considered important (crucial) in the income-realization process. It seems hardly necessary to point out once more that the value increase must be conceded before the question of realization -- net quick-asset betterment -- arises. The realization problem then may be resolved into an attempt to find an event at which the profession can agree that working capital is improved. Now is there any precedent for considering as the crucial realization test the transfer of funds from agent to principal or vice versa? Clearly not! The precedent in accounting is in the direction of treating transfer of funds between affiliates in the agency relationship as relatively unimportant and of far too little consequence to trigger the recognition of value increases or realization. From the viewpoint of the consolidation of agency and principal records for reporting purposes, realization is normally presumed to occur when the agency (corporation) has sufficient evidence to record an increase in quick assets.

A little reflection on the profession's attitudes toward withdrawals by sole proprietorships and partnerships will show in such cases how unimportant withdrawals are considered to be. Accountants are so accustomed to thinking in terms of the association view with regard to partnerships that they tend to assume and take for granted that the earnings of the firm are indeed the earnings of the partners. They are accustomed also to regarding the firm's income as the owner's income and

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[9] The recent emphasis on growth stocks has made this approach more popular. A number of empirical attempts have been made to relate the price of shares to retained earnings, to cash dividends, and to a host of other variates and combination of variates. M. J. Gordon, for example, states: "He receives the dividend in cash and the retained earnings in a rise in the share's value, and if he wants additional cash he can always sell a fraction of his equity. In short, the corporate entity is a legal fiction that is not material with respect to his rights in the corporation or the value he places on them." "Dividends, Earnings, and Stock Prices," The Review of Economics and Statistics, May, 1959, p. 103.

considering withdrawals as totally unimportant in the income recognition process and relatively unimportant in most other connections as well. This strong attachment for the association view, it may be added, has grown up in spite of a well-established and sharply-defined distinction between the firm as an accounting entity and the individual as a different entity.

It may appear that domination -- the power to make withdrawals -- is the important difference between corporations and other forms of business organizations for income reporting purposes. But what about restrictions on withdrawals in partnership agreements? Or restrictions resulting from loan agreements? Furthermore, the important reason why domination cannot be used as an argument at this point is that an association or agency view of a corporation must recognize that the owners do have such powers of withdrawal within the surrounding legal restrictions. The association view does not emphasize the importance of freedom to withdraw or even to manage. Thus, the proportional-interest doctrine does not seem to be appropriate if the association view is taken, and no income would be realized to recipients of dividends if such dividends are made in property. What about the association view and stock dividends?

Under the association view the earnings would be income to the owners when the income is earned and realized by their agent -- the corporation. A decision not to take out assets in the form of dividends would appear to have no important bearing on income to the recipient just as the decision not to withdraw partnership earnings has no important bearing. The decision to have a stock dividend is analogous to the decision of a partner to have a part of his drawing account transferred to his more permanent capital account. One must beware of the analogy because of legal differences between retained earnings and capital stock and the possibility of different market reactions. If the association view is appropriate, however, market behavior would not seem to be an important consideration except as a mechanism for reflecting changes in expected future corporate policy.[10]

With stock dividends one must remember that the individual shareholder may have an opportunity cost in the sense that if the funds are to remain in the firm he loses larger income or satisfaction that he might have derived from the funds in other uses. An individual holder might be able to derive more benefit from the dividend than he can from his increased interest in the business. This opportunity cost cannot be too great in a well-developed market, however, since each individual can

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[10] At times the Patons take an association view. "As stated above a dividend is basically a distribution of corporate assets, and it is nothing short of ridiculous (or perhaps one should say ironic) to label a procedure which insures the permanent retention in the business of a specified amount of income funds as a 'distribution.'" William A. Paton and William A. Paton, Jr., Corporation Accounts and Statements (New York: The Macmillan Company, 1955), p. 95.

sell his holdings until the tendency to arbitrage narrows the gap. A stock dividend may be interpreted as a statement of intention, but unfortunately the overtones are not clear. Such action may indicate a commitment to growth by freezing retained earnings, or it may indicate the opposite -- intention to continue the regular dividend rate on a large number of shares. One interpretation or the other may strike the fancy of those in the market and change the value of stock. Otherwise it is difficult to assert that owners are better off than if they had received assets. Alternative opportunities vary and the incidence of income tax is certainly not uniform.

Clearly other equity holders are in better positions than if their cushion had been reduced by asset distributions; thus we reach the strange conclusion that stock dividends as opposed to asset distributions clearly strengthen everyone's position except possibly the position of some recipients. (Competitors, who in an enterprise society are supposed to look out for themselves, are not so well off due to the added strength of the firm.)

Suppose we turn now to the separate entity point of view and examine dividend possibilities in terms of the realization criterion. The quotation below is a deserving statement by Husband:

> From the entity point of view the following would seem to constitute the most reasonable line of argument and the most reasonable conclusion:
>
> 1. Income earned by the corporation is entity income and not the income of the stockholder participants.
>
> 2. Any resulting retained earnings constitute part of the corporate entity's equity in itself.
>
> 3. A distribution of assets which reduces the corporate entity's equity in itself (a cash dividend) or the transferring of part of the corporate entity's equity in itself to the stockholders (a stock dividend) transfers to the stockholders something which was not theirs previously and therefore constitutes income to the stockholders.[11]

From this point of view it may be argued that a cash dividend is income to the recipient because the net effect is a reduction of the buffer assets for all members of the organization in favor of the residual equity holders. With the separate entity assumption, it is entirely gratuitous to assume that earnings by the corporation without reser-

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[11] George R. Husband, "The Entity Concept in Accounting," op. cit., p. 555. Notice the "hard" concept of the entity. The milder organization concept of an entity would interpret retained earnings as an uncommitted pool for the benefit of all groups.

vations are a part of the equity of the residual holders. In fact, the very term "residual holders" may be ill-chosen and the assignment of all retained earnings to this interest may be pointless. Under Husband's scheme stock dividends would apparently increase that book value of the common interest.[12] At least that part of the book value derived from retained earnings would not be imputed to the common holders. Instead of using Husband's "entity's equity in itself" it seems more useful to return to the older treatment of retained earnings as "undivided profits" -- undivided among the classes of equity holders as well as undivided among the individuals composing the common stockholders. If management is, in fact, a coordinator of interests that are essentially conflicting and accepts as one of its chief obligations the survival and enlargement of the enterprise, the undivided profits may be considered as "undistributed," and to include the balance with any group of equities serves no important or even useful purpose. It is true that the usual ownership contracts are drawn so that residual holders *seem* to be getting the primary benefits from retained earnings. However, the position of other equity holders is improved, and inasmuch as they have already indicated a willingness to substitute safety for earnings, their subjective improvement may even be greater.

We now ask in what ways the amounts included under capital stock or under bond obligations are different from the amount kept under undistributed profits. Does, for example, the amount under the capital-stock caption represent a claim by the stockholders? An equity of the shareholders? Some other kind of interest? With the assumption of a going concern, it may be argued that the terms 'equity,' 'interest,' and 'claim' should be abandoned altogether. Husband argues that retained earnings do not represent an equity or a claim of the residual shareholders, but he accepts without question that the capital stock balances *do represent* the equity or claim of the holders. In what sense is the balance of the capital stock account an equity or claim of the

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[12] Book value, as is pointed out elsewhere, is a strange computation. Current assets are near current liquidation values, but unfortunately the carrying figures for other assets may or may not have any relationship to any value concept. Book value has some use for judging the value of an enterprise in its entirety, but its usefulness here is probably less than many accountants believe. If two businesses have demonstrated the same earning power in the past, it *may* be that the one with the larger book value depends more on *properties* for its income. The other firm may be depending more on the *personalities* and other non-asset considerations. In the former case, it is sometimes assumed that future earnings should be more stable because even a less high-powered management should be able to drain a normal stream of earnings from the larger complex of assets. Needless to say, the importance of the difference and of book value may easily be overestimated. Seidman points out some liquidating features of the book-value concept, which is supposedly constructed from going-concern values. *Op. cit.*, pp. 66-67.

owners? A bookkeeping transfer does not in itself indicate realization of income for the recipients, but it is possible that the psychological reactions of investors could change the value of stock interests so that these value changes in the individual holdings might be said to qualify as realized income to the recipients. We shall return later to the question of whether the stock dividend action of management may through a chain of probable psychological reactions justify recognition of income by recipients.

An approach to reporting and recording that stresses assets and responsibilities (or sources of assets) is certainly in harmony with the view of management as coordinator. There are no implications that the amounts recorded under headings for bonds, or preferred stocks, or common stocks are interests, equities, or claims in liquidation or otherwise. Furthermore, it is not necessary for an advocate of this system to take a stand on whether the retained earnings belong to anyone. Such questions are considered to be irrelevant for a going concern.[13] Unfortunately there are difficulties in defining source and of keeping track of changes in sources. When a dividend in property is declared, accountants transfer from one pool or source -- earnings extracted from customers and suppliers and retained in the business -- to another pool or source -- assets furnished by shareholders. A little reflection should convince one that the financial equivalent of "waving a wand" by the board of directors cannot make the assets some from a new source. A proprietary theorist may reject this position and arrive at the conclusion that the common stockholders have furnished the assets all the time. However, an appropriation of retained earnings in favor of preferred holders carries the strange implication that the preferred holders "furnished" assets to that amount. Bond interest payable seems to represent an appropriation and thereby to qualify as a source of assets! Of course there is a sense in which these folks do contribute to an increase in assets. It may be assumed, for example, that each group contributes to the increment in the asset fund exactly the amounts of the payments that must be made to them, and that such appropriations are recognition of these imputations. This view, it may be added, is in keeping with the attitude outlined in an earlier essay -- that factors of production (outsiders) contribute only to the extent of their costs and any excess is attributed to those who make up the entity. In view of these difficulties in accounting for asset sources and the lack of relevance of such historical to current decision, many accountants prefer the assets equals responsibilities approach. The latter equation in turn may be criticized for restricting the amount of recognized responsibilities to the amount of the assets.

The individual shareholder, if he is considered to be a separate entity, has no reason for keeping his books (recognizing value increases

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[13] Louis O. Foster has been an articulate advocate of the asset-equals sources-of-assets approach. "The Asset Approach to Elementary Accounting," The Accounting Review, March, 1941, pp. 8-15. Introduction to Accounting, (Chicago: R. D. Irwin Inc., 1941).

and decreases) in harmony with the rules adopted by the corporation.[14] If the stockholder is in fact divorced from the corporate entity, there is no necessity for requiring income to the recipient to be recognized as income for the corporation at any time. The stockholder has a right to certain prospects. The value of his prospect will be influenced by the success or nonsuccess of the corporation, but it is also influenced by market valuation by others who have different opportunities and may be subject to periods of optimism and pessimism. It is conceivable that a concern would declare liquidating dividends and still have the value of its stock rise in the market. This somewhat unusual situation might arise because regularity of dividends is a highly weighted factor in setting the value of the stock, or it might be the result of sheer ignorance.

Now, if the market reacts so that a stock dividend increases the value of a share of stock, if there is no compulsion for the individual holder to keep his records in line with the corresponding records of the concern, and if the resulting value increase meets the test of realization, then stock dividends may be considered to be income to the recipient.

Let us now review the criteria for realization and apply these criteria to the problem of stock dividends with the separate-entity assumption. Suppose that the value increase has taken place and is expressed in higher market prices for the security. The problem is then no longer a problem in establishing the adequacy of the evidence. The presence of an independent market furnishes objective evidence of the existence of the increase and helps measure its magnitude. But are the usual liquidity tests for accounting realization met?

If the stock itself is held as a marketable security and meets the tests for inclusion among the current assets, it seems that the increase is in the form of a current asset and therefore meets the liquidity aspect of the realization test. The actual sale of the securities is an unimportant event and does not seem to be crucial enough in the string of events to merit serious attention. Obviously, if securities are held for

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[14] Husband holds this view in emphatic terms. "It may be argued, with some logic, that once the stockholder becomes an integral part of the corporation his accounting thereafter should coincide with the accounting of the corporation and that the corporate book value of the stock dividend received should constitute the basis of income recognition. This view of the case, however, is not consistent with the view that the corporation and the stockholders are separate entities and that the stock dividend transfers to the stockholder corporate entity equity to which he previously did not have title. From the separate entity point of view the basis of accounting for the corporation's experience is not of material influence in deciding what should be the proper basis of accounting for the stockholder. The stockholder as a separate entity may therefore properly use the market basis of the dividend stock received as the basis of income recognition." George R. Husband, "The Entity Concept in Accounting," op. cit., p. 556.

control or for community-of-interest purposes, they do not qualify as current assets, and their increased value does not meet the liquidity tests unless effective control can be maintained after disposal of the dividend shares. For securities held for control purposes, the conversion of the incremental value into current asset may mean the undermining of the control position and accordingly the dividend shares must be classified as non-current assets. On the other hand, if control or communal interest is maintained without the extra shares, the increment meets all liquidity tests and may be treated as realized income.

We now have sufficient background to examine the relevance of control and proportional interest to income recognition. A cash dividend tends to leave the relative interests of common holders unchanged unless some of them decide to reinvest their dividend checks in the same company. The decision to reinvest or not reinvest these receipts is an independent decision and is usually considered to be of little or no consequence for income recognition. Reinvestment decisions to maintain proportional position are influenced by a number of considerations not directly related to income recognition, e.g., preemptive rights, management policy, competitors' actions. Common holders have less equity after a property distribution, and their position with respect to a holders of other equity contracts is weakened. Unless these holders are also contenders for control, their position vis a vis common holders is irrelevant for the income problem.

The relative-position criteria for income realization on stock dividends deserves restatement. At first glance it seems that such a test for realization is an anomaly found nowhere else in accounting. The arguments in support of this criterion are so weak, scattered and confused that no effective defense exists even in the tax literature. The argument advanced here relates the control factor to the current-noncurrent classification of the investment. Thus control by the investor is related to liquidity, and liquidity is an essential feature of realization. In this fashion certain changes in control are relevant to the problem of income recognition by the recipient of stock dividends.

The presence of an effective market mechanism and the lack of desire to control are both required before accountants classify investments as current assets. A liquidity constraint that requires a working-capital increase at least equal to the amount of income recognized is built into the accounting definition of realized income. (A discussion of this widely misunderstood aspect of realization may be found in the preceding essay.) If retention of the dividend shares is necessary to maintain control or continue the community of interest, clearly such shares fail to meet the tests for working capital inclusion and therefore are inadequate to support income realization even though the evidence supporting increased value is adequate. Now it is possible that the recipient has more than enough stock to assure control. Accountants would ordinarily agree to classifying the excess stock as current. Such stock could be disposed of without interfering with the operations of the firm, and in the presence of an adequate market would qualify as a quick asset. In a similar way any dividend shares unessential for control are current and may be used to support the treatment of a value increase as realized income. The usual change-in-interest

rule is not so refined. In fact, it is hopelessly confused. A stock dividend of common on common is not considered to be income even though the value of the holdings is increased and control is not a factor. On the other hand, common on preferred may be considered to be a change in interest and therefore realized income regardless of the position of the recipient.

Minority holders are usually not interested in control and a test of income that stresses change in interest would seem to be completely without meaning for them. One of the difficulties with respect to stock dividends is that all investors (equity holders) are not homogeneous with regard to control. In the same concern at the same time there may be holders who bear a principal-agent relationship with the concern, and there may be several who have no claim whatsoever to such a relationship. For the latter group the separate entity approach with the investment shown as current seems to be appropriate. Thus, in the typical stock-dividend case the accountant is confronted with divergent relationships. Accountants do pass judgment on the relative importance or unimportance of the association assumption in order to classify investments, and the required change is therefore not as great as it may seem to be.

The difficulty should now be obvious. It is the investor's relation to the corporation that determines whether value increases from stock dividends are realized income. The entity or association approach is relevant to the extent that it is related to the presence or absence of control. The accountant's consideration of the entity or association view for bookkeeping at the corporation level has little or no relevance to this problem. At least one point should be clear. The traditional interpretation related to changes in the degree of dominance, control or proportional interest, is not satisfactory, and its usual rationale is even worse.

ANOTHER LOOK AT LIFO

The LIFO material has been covered and recovered for several decades with many extremely competent (and financially disinterested) accountants on different sides of the argument. Many of the publications have been first-rate expositions that explored relevant theoretical and practical aspects of the problem. Unfortunately a number of writers continue to stumble over identical points decade after decade, and it seems appropriate to discuss these shoals again in some detail. Moreover, the environment has changed considerably since the pressure finally convinced members of the Finance and Ways and Means Committees (Seventy-fifth Congress) that non-ferrous metal fabricators and tanners were subject to discriminatory taxation unless they were permitted to use LIFO. Later carryover tax provisions relieved the discriminatory pressure to some extent, but by that time (1942) it was obvious that the old sine-curve assumption of cyclical activity was in for serious modification before it could be applied to post-war activity. The evidence suggested a plateau with future variations around a much higher general level of prices than had previously existed. Accordingly the probable effects of LIFO needed to be re-examined and fitted into the new economic price structure.

The purpose of this essay is to examine the usual arguments relating to LIFO in light of post-war developments. Several original arguments, both for and against, are no longer relevant. The usual arguments against the use of last-in, first-out may be classified: First, arguments based on physical movements of goods with an accompanying assumption that costs are somehow embodied in the physical units; second, arguments that LIFO is in the right direction but is only a weak step that interferes with getting the job done correctly through the application of general price-level adjustments; third, arguments that point out decisions that might be made to avoid unfavorable LIFO effects but are otherwise not consistent with enterprise goals; fourth, arguments that emphasize possible erratic income behavior and harmful financial reporting from LIFO. A few accountants apparently have objected to LIFO because its application may reduce the tax bill for the particular business concern. Clearly some individuals or groups of individuals must bear the tax burden. This argument should be related to social values and desirable cannons of taxation and is not discussed here. We are not concerned with the problem of tax equity, but we shall discuss the other arguments in some detail.

It should be clear to anyone who has observed inventory control procedures in manufacturing and trading concerns that physical goods seldom move in last-in, first-out fashion. For short periods a few items -- e.g., those loaded and removed by clams -- may perhaps meet this unusual test, but if there is the least danger of physical deterioration, an adequate inventory control procedure will require that the old units be removed before deterioration reduces sales value. The point that is so often not understood and needs emphasis is that to an advocate of LIFO the

physical movement of goods is completely irrelevant. If physical movement were pertinent, then the application of LIFO would be so rare that the controversy could be abated for lack of materiality.

In most textbooks and articles the reader will usually find the implicit assumption that identified unit cost is the ideal basis for inventory costing.[1] As a rule, the impracticability of identifying unit costs is pointed out, and the usual formulas (FIFO, LIFO and Averages) are introduced as convenient but imperfect substitutes. On the surface, this assumption seems harmless enough, but it has a very important consequence. If identified unit cost is *the* proper way to value inventory and determine the current merchandise charge, then it follows that LIFO, FIFO, and the averages may be graded good or bad to the extent that they yield results near to those that would have been rendered by the use of identified invoice cost. A standard is thus created by definition, and an ordering scheme is established for the feasible alternatives.

Clearly, the numerical result yielded by the assumed standard (identified unit cost), cannot be available in those cases where specific identification is impossible. This situation is overcome by a neat bit of inference. To the extent that the actual physical flow of units is first-in, first-out, accountants infer that FIFO will yield on allocation nearest to the standard allocation resulting from the use of identified unit costs. Since by assumption the standard gives the *right* allocation, FIFO is rated higher than the averages, and in turn the averages outrank LIFO. If the physical units are mixed together the moving-average assumption most nearly approximates the flow of identified unit costs and the moving average is therefore elevated to leadership just beneath the ideal itself. Only in rare instances will physical goods move in a by-pass manner, and only in these rare instances would LIFO be rate above its competitors. Clearly LIFO advocates must undermine the widespread feeling that identified-unit cost is the ideal standard for cost allocation and therefore for income determination.

To my knowledge, J. Chester Crandell was the first to attack seriously the assumption that identified-unit cost is the proper ideal. Crandell was building a defense for average costing, and he realized that an extension of average methods requires the overthrow of identified-unit

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[1] For a typical discussion consider the following quotation from William A. Paton and William A. Paton, Jr., *Asset Accounting* (New York: The Macmillan Company, 1952), p. 59. "The most realistic procedure, of course would be a system of labeling or tagging each unit or particle of cost as incurred in such a manner that it could be specifically traced and identified at any subsequent point in its journey....Occasionally this is practicable....In many situations, however, such a procedure is impossible or impracticable....This means that often it is necessary to adopt some *assumption as to the flow of materials* and other factors which can reasonably be employed in determining the cost of goods on hand..." (Italics mine.)

costing as the idealized standard. The defenses for LIFO and for the various average methods are not identical and each has its own positive arguments. It is true however that each must do away with the assumption that identified cost is ideal before it can enjoy widespread application.

The following statement by Crandell is a classic.

> ...consider an oil barrel into which is poured successively a certain number of gallons of oil, each of an identical nature and test, and at different costs per gallon -- say 10 gallons at 6¢, 30 at 8¢, 10 at 10¢, and 50 at 12¢, a total of 100 gallons at a total cost of $10, an average of 10¢ per gallon.
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> If one gallon is now sold, the gallon withdrawn cannot be identified, and as a matter of fact it probably actually consists of 1/100 part of each of the 100 gallons which were originally poured into the barrel. The purchaser does not care which gallon he receives and therefore, each gallon commands the same selling price. The seller, whichever gallon is delivered, parts with 1/100 of the total and has 99/100 left....and...from an economic point of view the remaining 99 gallons stand him $9.90. That is why I believe that only by the inventory values can the changed economic status of the seller be correctly reflected.
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> This is, I believe, equally true in a case, where, instead of pouring the 100 gallons of oil when purchased into a single container, all gallons purchased are segregated and continuously identified by being placed in identical gallon bottles, numbered successively from 1 to 100. It is, of course, technically true that if the shipping clerk delivers gallon bottle numbered 15, the seller will part with an identified gallon of oil which actually cost him 8¢, but to use 8¢ in determining the gross profit from the sale would not, in my opinion, measure the change in the economic status of the seller. Under such a plan, by selecting a particular gallon for delivery, the seller would be able to show whatever profit he wished on his profit statement, and yet the fact is that, since he parted with 1 out of 100 identical units, whichever one he chose to deliver would have reduced his inventory assets by an identical value, 1/100 of the previous whole. This, it seems to me is sufficient reason, from the standpoint of principle, to remove from serious consideration the costing of sales on the basis of selected identified purchases of identical goods.[2]

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[2] American Institute of Accountants, Discussion of "A Statement of Accounting Principles," September 29, 1938, included in Papers on Accounting Principles and Procedure presented at the Fifty-First Annual Meeting, 1938 (New York: American Institute of Accountants, 1939).

The Security and Exchange Commission has been reported to favor average costing in some instances, although the Internal Revenue Service, unfortunately requires FIFO if securities cannot be identified. Obviously the IRS ideal is identified unit cost.

Suppose, to illustrate, that an investor makes the following purchases of identical common stock:

100 shares at 180
100 shares at 250
100 shares at 140
100 shares at 25

Stock splits and other capital adjustments are ignored, and it may be assumed that the owner is now selling the equivalent of 100 shares at $180. It is clear that he may show no gain or loss, a gain of $155, a gain of $40 or a loss of $70. This ability to manipulate may lead to reports that seriously mislead the reader, for the investor in fact parted with one-fourth of the income-getting power of the asset.

The intellectual basis for identified unit cost is so weak that it is practically non-existent. For decision making, costs are clustered about the alternatives involved in the decision and their inclusion or exclusion is determined by their relevancy to the decision. In determining the feedback necessary for control the goals and criteria should normally be those used in making the decision, and the pattern of cost assignment and accomplishment should follow the lines used in making the decision. Now decisions require mental activity and call for classification, arrangement and appraisal of benefits and sacrifices of many kinds. In many cases these variables may be simplified by relating them to physical properties, areas of responsibility, periods of time, and other familiar concepts. The decision to manufacture a physical unit with revenue-producing properties will usually require an estimate of sacrifice (cost). Clustering costs to be matched with revenues or with other decision estimates is simplified tremendously if the cluster point is a familiar object or area that persists or recurs and can be related to the increment of revenue, or to the sacrifice involved. Major decisions may serve as cluster centers, but most past decisions easily become confused in the changing flow of activity, and their cost~~s~~ assignments may be difficult to relate to the future.

In fact, assigning costs to units of output, sources of services of various kinds, areas of responsibility, periods of time, etc., becomes so ingrained in accounting thinking that some leaders have forgotten the voluntary and utilitarian nature of cost assignment. A slight step further leads to fantastic animistic overtones. The idea that costs somehow attach to units of production like barnacles to a boat may be a useful elementary teaching device, but to argue, among theorists, that costs "attach" or "adhere" in some dualistic body-soul relationships is the rankest kind of gratuitous animism. The contention that costs are somehow "embodied" in physical units and are "released" (disembodied) at the point of sale to be reincarnated in periodic revenues is the intellectual equivalent of the sleeping princess turned to stone and is consistent with the cruder pantheistic aspects of primitive religion. LIFO

advocates are well advised to ignore the flow-of-goods objections and to concentrate on objectives and methods of arraying sacrifice (cost) to further desirable objectives.

Related objections to LIFO stress the difference between income determination and income administration and sometimes include such semantic embroidery as "artificial tinkering with profits" and "flagrant distortion of profits." Advocates of LIFO wish to match current costs with revenues, i.e., deduct from revenues an amount for capital consumption sufficient to replace the physical stocks. With the typical accountants' insistence on documented cost it is difficult to get the profession to agree to the use of current costs, and accordingly LIFO defenders have been willing to compromise and accept the latest invoice cost or its equivalent calculated with the aid of specialized index numbers. Notice that the issue is concerned with matching current costs and that the last-in, first-out formula is a practical device to approximate the objective. In this sense the LIFO formula in itself is no more important than the childish sum-of-the-years' digits rule for measuring relative benefit received from a fixed depreciable asset. It is important to understand that some objections to LIFO are directed at current costing in general, while others emphasize LIFO's shortcomings as a workable approximation of current costing.

Current costing and its LIFO approximation call for a redefinition of income that is based on maintenance of physical capital. Charges that LIFO is "artificial tinkering" with the profits or that it "distorts" income miss the point completely and beg the question. The question at issue is whether or not a redefinition of profit that keeps the physical stock intact is a useful one. The individual pros and cons of the redefinition are well known and available in any acceptable advanced text. The American Institute holds generally that the old definition of profit is preferable at this time and that retained-earnings restrictions and other devices may be used to explain dividend and financial policy. This position is defensible and asserts in effect that the old definition of profit with supplementary notification is adequate. LIFO defenders feel that this recommendation is makeshift and resent the implication that the Institute's definition is "true" profit and that financial matters are a thing apart. To a defender of LIFO the income problem cannot be divorced from its implications and its uses. Clearly financial implications flowing from income definitions and measurement rules cannot be disregarded.

Advocates of LIFO are directly descended from the sturdy defenders of base stock. The reader will recall that the basic amount of inventory is considered to be a fixed asset. There is a strong probability that emphasis on short-term, debt-paying ability was an important factor supporting this position. It is clear that a minimum inventory (or even a minimum balance of cash) is not available for short-term debt payment by a going concern. In fact, fixed assets (in the traditional sense) may be a more promising source of short-run funds than either minimum inventory or minimum cash. There is usually some flexibility in making replacements of typical fixed assets, and it may be possible to fend off creditors by keeping replacements below depreciation charges for some time. Inventories, and even cash, may be plundered for a

limited time, but by definition it is difficult for a going concern to plunder its minimum stock for any appreciable length of time. In fact, a satisfactory current ratio of, say, 3 to 1 may be interpreted as meaning that the inventories and other current assets could be reduced by a factor of x (perhaps two-thirds) and still permit the firm to continue as an operating unit. This interpretation is not based on the assumption that a shrinkage of two-thirds in liquidation value would still permit payment of current liabilities in full.

In spite of the debt-paying similarity between fixed assets and basic inventory, it seems unlikely that this feature was the prime consideration for identifying last-in, first-out with base stock, for base stock accountants were never greatly interested in the balance-sheet effects of their decision.[3] Until approximately World War II, American accountants were in substantial agreement that fluctuations in the market values of fixed assets were not a determinant of enterprise profit. This conclusion probably follows from acceptance of the traditional concept of income realization for a going concern.[4] Even if the cyclical approach is replaced with an assumption of plateaus, this "realization" may be interpreted as a restatement of capital requirements. These considerations are mentioned because recently there has been agitation for acceptance of LIFO cost or market whichever is lower. This agitation has been opposed by taxing authorities and has been supported primarily by accountants who are advocates for tax-paying clients.

If the by-pass (LIFO) method is adopted when costs are low, the effect is similar to base stock. Future market prices are not likely to return to these low levels, and the cost or market reduction will

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[3] The almost total disregard for balance-sheet values by accountants of that day is matched only by the disregard of some present-day accountants. For example, Perry Mason writes: "Once the assets have been acquired the enterprise is committed to their use and their undepreciated balances are of little significance to anyone." *Principles of Public Utility Depreciation* (Chicago: American Accounting Association, 1937), p. 26. See also the arresting statement by Paton and Littleton: "Inventories and plant are not values, but cost accumulation in suspense, as it were, awaiting their destiny." *An Introduction to Corporate Accounting Standards* (Chicago: American Accounting Association, 1940), p. 14. The "dynamic" balance sheet of Eugen Schmalenbach is ~~the~~ probably the prototype of such nihilistic balance-sheet doctrines. See *Dynamic Accounting*, translated by G. W. Murphy and Kenneth Most (London: Gee and Company Limited 1959).

[4] A firm could make a major policy decision to move its plant and thereby realize the increment on its land. Apparently the concept of piece-meal realization through the sale of product was not brought forth until later. It is interesting to note that the piece-meal approach assumes a same-direction movement between the selling price of product and the replacement cost of plant -- a kind of cost or market assumption on the upward side! Modern sales -- leaseback arrangements have changed thinking considerably on the realization criterion applied to fixed assets.

not ordinarily apply to the basic layers. Under a cyclical assumption cost or market would tend to reduce the carrying figure to its lowest point regardless of whether LIFO is initiated in a period of low or high prices. The effect is essentially that of base-stock methods with one important difference. The write-down of basic stock is usually a direct retained earnings adjustment that does not affect reported income. With LIFO cost or market the writedown will normally be against earnings in a piecemeal and irregular way. Thus defenders of LIFO or market -- unlike base stock advocates -- are in the position of arguing that changes in costs of the basic layers are determinants of income if they are downward and do not affect income if they are upward. This is a strange doctrine, and the conjunction of LIFO and market in this sense cannot be defended.

We now turn to arguments to the effect that LIFO means well but is simply inferior to general price-level adjustments. It should be obvious that unmodified LIFO may give strange and useless balance-sheet figures. Certainly these amounts normally give no relevant information as to the current value of the stocks or the debt-paying capacity of the inventories. Price-level adjustments, it is argued, permit useful income determination and also useful financial figures. Of course, similar adjustments may be applied to LIFO balance-sheet figures. There is no reason for insisting that the valuation technique for one purpose must determine the measurement for another purpose. We have a well-established precedent for using an unrealized appraisal increment for fixed depreciable assets in the stockholders' equity section and there is no valid objection to using similar devices to disclose current inventory values.[5] Moreover, accountants have a long tradition for disclosing such information by parenthetical remarks or footnotes to the statements.

Many of those who object to LIFO wish to apply general price level adjustments to all assets and liabilities, i.e., do the "complete job." Defenders of LIFO, on the other hand, often feel that the chief source of difficulty stems from inventories and fixed assets, and if these two items can be adjusted for changes in price levels, the other errors can be tolerated. The former group feels that an identical procedure can be applied directly to all assets and equities and that such specialized techniques as LIFO and individual depreciation adjustments are not necessary. The difference is complicated further due to the use of specialized indexes with LIFO and specific fixed asset indexes. General price-level indexes are usually advocated by those who adjust all assets and liabilities. In broad terms the latter group wishes to assure maintenance of purchasing power before reporting income, while the former group feels that provision should be made to keep physical properties intact.[6]

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[5] F. W. Woodbridge has been advocating such modifications to base stock inventories for at least a third of a century. Elements of Accounting (New York: Ronald Press Co., 1925).

[6] LIFO advocates are essentially defenders of current costs, and

Lifo is sometimes condemned because its use in conjunction with current tax law and investment~~s~~ policies may lead to decisions and actions not otherwise favorable to the firm's objectives. It is argued, for example, that the fear of "eating into" low cost layers and thereby showing large taxable income may lead to intemperate purchasing policies and needlessly large inventories.[7] Moreover, layer depletion may tend to occur when the trade cycle is on a sharp upswing, so that additional purchases for layer protection may increase inflationary tendencies and misdirect scarce resources.

One of the traditional arguments for LIFO has assumed that over the trade cycle the tendency to smooth reported income will encourage businessmen to invest when business activity and costs are low and discourage investment when activity is near the top of the cycle where the effect is to increase prices greatly and output only slightly.[8] The disposition to protect layers from depletion tends to counteract this argument. In addition, a counterveiling force results from the inverse flow of funds for tax payments. Thus LIFO tends to report less profits on the upswing, and as a result out-payments of funds for income taxes are less. To the extent that investment decisions are influenced more by funds available than by reported profit, LIFO may lead to more investment on the upswing. In a similar fashion on the downswing LIFO normally reports more profits or less losses than competing costing schemes. This result may indeed encourage new investment but the fund flow is again an opposite force. Tax payments would be greater (or tax refunds less) and the fund effect would be in the direction of decreasing investment. The fact that the funds involved are roughly only one-half the reported profit is offset in part by the greater relative impact of a dollar of funds over a dollar of reported profit. (A behavioral

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are much closer to those who wish to use specific indexes than to general price level advocates. The failure of general-index adjustments to provide for changes in relative costs of the factors and agents of production means that factors continue to be combined as if there were no changes in relative costs except general changes related to time of acquisition. Dutch and Indonesian accountants at Ralin Coy., have worked out an interesting compromise . Specific indexes are applied to "real" assets and a general index is applied to the monetary assets and equities.

[7] Waino W. Suojanen, for example, works out an equation to relate the penalty for layer depletion to excessive purchase prices that could be profitably incurred to escape such depletion. "LIFO as a Spur to Inflation -- The Recent Experience of Copper," The Accounting Review, January, 1957, pp. 42-50.

[8] The most complete and positive arguments for the influence of accounting on business cycle behavior may be found in Fritz Schmidt, "The Business Cycle - an Accounting Mistake (Die Industrialkonjunktur - Rechenfehler) published in Magazine for Scientific Management, Berlin, 1927, pp. 9-89.

scientist might be interested in developing a transformation function between the two.) A similar line of argument may be applied to the probable effects of LIFO on dividend distributions and other forms of capital withdrawals.[9]

The smoothed income reports under LIFO deserve further comment. Backlash may be introduced by layer depletion and by failure of selling prices and cost prices to move in the same direction. There is also a more subtle factor at work. LIFO tends to report less profit on the upswing than FIFO if cost prices are increasing at an increasing rate. Less profit is reported by FIFO if prices are increasing at a decreasing rate. This series of relationships is often overlooked and many therefore merit more attention.

In the following chart B_1 and B_2 are average unit prices charged against revenues under LIFO for periods P_1 and P_2. Now A_1, and A_2 represent average unit prices charged to operations under the FIFO formula for the two periods. The horizontal lines A_1 M_1, and A_2M_2 represent the lag introduced by FIFO. It is evident that the prices do not have to change consistently over the period. In the specific case $\angle C_1$ (the change in cost prices during the first lag period) is greater than ΔC_2 and consequently reported profits in P_2 are greater under FIFO. This relationship -- so long as there are no changes in the physical volume

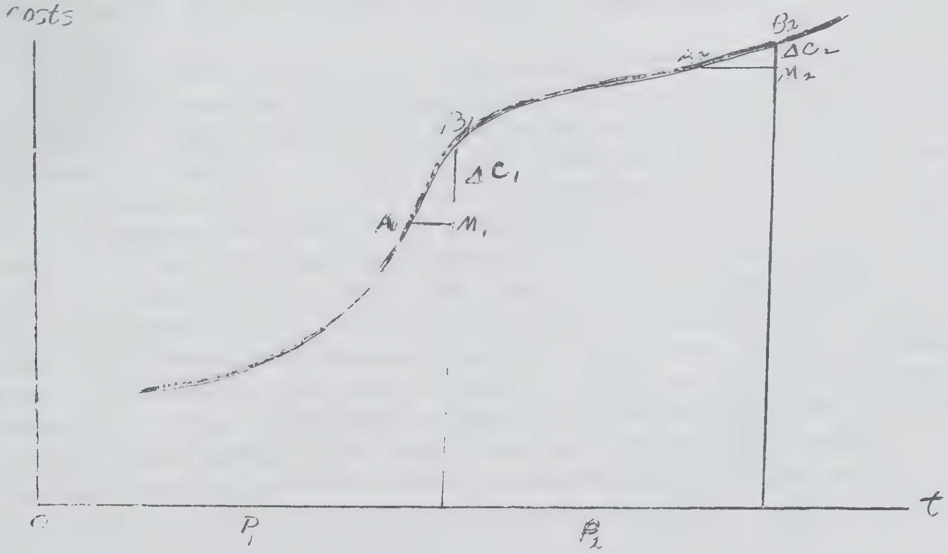

Chart I

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[9] In 1916, E. D. Page defended base stock as a "deterrent to its improvident distribution in dividends. . . ." "Balance Sheet Valuations," The Journal of Accountancy, April, 1916, p. 246. The income effects were also stressed by H. T. Warshow, "Inventory Valuation and the Business Cycle," Harvard Business Review, October, 1924. Executives of International Harvester Company and American Smelting and Refining have long stressed the benefits from the elimination of "paper" profits. The counterveiling tax fund argument is a recent development, for the corporate tax burden was relatively unimportant before World War II.

of inventories may be written $\Delta C_2 - \Delta C_1$ = difference in profit reported. We may set up the relationship in ratio form: if $\frac{\Delta C_2}{\Delta C_1} > 1$, then prices (inventories) are increasing at increasing rate and profits under LIFO will be less. Comparable generalizations are appropriate for decreases in prices.

The horizontal distances represented by $A_1 M_1$ and $A_2 M_2$ indicate the time lag resulting from the use of FIFO instead of LIFO. These differences are not the total lag that is related to stock turnover through the FIFO formula. LIFO, too, fails to match current costs with revenue by a lag factor related to order time and policies for inventory stocking. As a rule, the faster the stockturn the less the lag between sales and latest invoice costs. Notice, however, that the stresses introduced by cyclical activity tend to affect the turnover of inventories and change the magnitude of relevant lags.

LIFO, when compared with current costs, tends to show "paper" losses on the downswing and paper gains on the upswing. On the downswing with the assumption of constant physical inventories and slower stockturn the lag is increased. On the upswing with constant physical inventories and faster turn the lag is shorter. Thus it appears that paper losses would be greater than paper gains, and the system would have a built in losses-reporting bias. The bias turns out to be only on a unit basis, and is offset by turnover changes.

A related question is concerned with whether the rate of turnover has any influence on the paper profits reported by FIFO when compared with LIFO. FIFO tends to approximate inventories at current market as turnover increases. With a faster turn LIFO moves nearer the current costs in expense but not necessarily nearer to current costs as assets. But with faster turnover FIFO also tends to charge later costs against revenue so that the net lag between the two may or may not be closed. (Empirical study is needed here, but there is some reason to expect the lag to decrease.) If the net lag is not changed and if prices are increasing at constant rates a change in turnover would not change relative profit reported by the two schemes as long as physical inventories remain unchanged. Most published comments on the effects of turnover assume that physical inventories are lower as turnover increases. Smaller physical inventories mean that the inventory problem is less important in the firms' overall financial and operating world. Agitation for LIFO and elimination of paper profits is therefore less active.

We turn now to the relationship of LIFO to renewal (replacement) depreciation methods, to period costs of direct costing and to Professor David Green's cost obviation.

Cost of the original inventory (the basic layers) may be treated as a capital cost of providing a suitable environment, and thus is closely related to the renewal method of depreciation. Both assume an indefinitely continuing concern, and charges against revenues are essentially self adjusting for changes in specific price levels, i.e., at current costs. Both continue to carry basic environment costs at original outlays. Additions to basic assets are handled differently on the technical level, but the effects are essentially consistent. Renewal depreciation

makes a distinction between capital and revenue expenditures, and increases the cost of the basic complex of assets only for betterments or additions, e.g., when service potential is definitely increased. LIFO accomplishes a similar purposes by simply adding a layer to reflect the added cost of increased service potential.

A slight, and normally unimportant, difference between LIFO and renewal depreciation develops when the environment is contracted. LIFO ordinarily charges the costs in the latest layer against revenues, unless the decrease is considered to be temporary. A more sophisticated report that is in keeping with the current cost ideal, charges revenues with current cost, credits inventory at layer cost and takes the excess credit to an equity account representing a capital adjustment for changes in the measuring rod used to measure capital invested. Under the renewal method retirement of an asset without replacement usually results in a charge to operations equal to the original cost of the asset. To the extent that time is a factor in the retirement decision, the units retired tend to be the oldest units. Thus the oldest costs tend to be taken to operations, while in LIFO the costs of the last layer added are matched with revenues. To the extent that the assets are "basic" for operations and that the industrial economy is expanding, these differences are not likely to be important.

The relationship of LIFO to direct costing is not so clearcut and compatible. The current costs of keeping the environment suitable for profit-making, e.g., keeping basic plant and stocks available, are charged to operations. These costs are essentially the "establishment" costs of English direct costers. Moreover, these establishment costs are usually matched with revenue and thus have the same temporal distribution as period costs. If an additional LIFO layer is added (i.e., production outruns disposition for the period), some current fixed costs are diverted to the layer and therefore less fixed costs are matched with revenues. The problem is therefore related to the treatment of fixed overhead on fixed assets constructed for enterprise use. Most LIFO advocates are not greatly concerned with temporary excess stocks and are willing to treat them as current assets subject to the firm's own rules for carrying temporary assets. Whether the firm wishes to carry excess stocks at direct cost or at full cost is not likely to become a major issue.

The relationship of LIFO to cost obviation is also indirect. Defenders of LIFO clearly prefer to match current costs with revenues. Thus they charge a measure for sacrifice involved in procuring the revenue, but the charge is only indirectly related to the anticipated cost of regaining the former income-producing position. The charge can be said to be an imperfect measure of the cost obviated, but the definitional problems of "obviation" still remain. Shall we assume, as initial conditions, no plant? If so, the sacrifice of the first sale or of the first period includes major fixed costs. Shall we smooth the cost of a generation of output (e.g., fixed depreciation costs) to smaller inventory units than the entire output? Or shall we always assume that the the costs of keeping a favorable environment are period costs and that the sacrifice relevant to a particular sale is short-run variable cost?

"Obviation" is a word, and LIFO advocates may or may not have emotional reactions to it. LIFO is, in fact, consistent with either direct or full costing.

We conclude with a short comment on the influence of material speculation on the report rendered under LIFO and its interesting variant, next-in, first-out. This variation attempts to correct the lag inherent in LIFO by matching unit costs incurred in the next purchase following the sale. Sales near the end of a period may be costed at either latest invoice prices or prices in effect at the statement date.

It is possible to build an argument to the effect that next-in, first-out is superior to the generally accepted ideal of using current costs at the time of disposal. This formula, like LIFO, has the clear-cut selling point of being an actual accounting cost to the firm. And beyond this practical point, the next purchase is technically the actual cost of keeping the stocks intact while the cost at the time of sale is what it would have cost to keep the stocks intact if purchases orders were placed when the sales were made. NIFO has the obvious disadvantage of permitting some manipulation of profits by hurrying or delaying purchases for replacement. Management already enjoys some manipulative freedom under LIFO. Ability to manipulate is increased under NIFO due to the additional time allowed for inventory replacement. Goods sold at the top of a cycle may not be replaced under normal conditions until costs are much lower. The natural tendency to defer replacement when lower costs are anticipated and to replace rapidly when future costs are expected to rise may be modified to influence the income reports.

GOODWILL -- THE PROBLEM OF UNRECORDED VALUES

Many economists have been critical of accounting routines that yield asset totals with little or no relationship to the total value of the enterprise. There are some very good reasons why the total values assigned to the assets ordinarily do not equal the value of the firm. First, each asset is valued individually by measurement rules related to its own specific cost and service potential. It should be observed further that even if assets are carried at current replacement costs there is no reason to expect their total to equal the value of the enterprise as a going concern. The second reason is then obvious: there are many valuable considerations, properties, attitudes, and relationships, that the accountant does not attempt to value individually. The difficulties of valuing directly such important considerations as the excellent morale of the working force, an outstanding foreman, a salesman's extraordinary ability to move goods, the purchasing executive's astuteness or the stock manager's tenacity are obvious. Another reason for variation is that the discount rate for the firm may be entirely different from that applied to individual assets. Speaking more generally, the measurement rules applied by investors to a business may be entirely different from those applied by accountants to specific service potentials.[1]

It is clear that the accountants' asset valuations need not represent the value of the enterprise, but at least some economists and businessmen have argued that measuring and reporting should be changed so that the two valuations do coincide. The mechanics of such a change are comparatively simple. Given the agreed value of the firm, an entry may be made to charge an asset account for the difference and to credit and account with unrealized proprietary gains. If the recorded amounts are not appropriate at the end of the succeeding accounting period, a modifying entry may be made to record the increase or decrease and thereby keep the asset total in line with enterprise value.

The selection of an appropriate name for the debit offers interesting alternatives. An acceptable title might be: "Unrecorded and Mis-valued Assets." In practice the general and briefer title "Goodwill" is often used instead of more lengthy and indicative titles. The following statement by Paton is one of the earliest.

> The intangibles are the residuum, the balance of the legitimate values attaching to an enterprise as a totality, over the sum of

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[1] This possibility is discussed in some detail in the essay related to income and measurement. Some enterprise valuations are made with the help of strange rules. The accountant must then decide whether any excess is due to undisclosed values or to bad judgment.

> the various tangible properties taken individually. That is, the intangibles measure that part of a company's asset total which might be said to reside in the physical situation viewed as a whole, but which cannot be considered -- except upon some highly arbitrary basis -- to inhere in, or have a residence in, specific units of plant, equipment, etc.[2]

Canning has a similar statement under the general heading: Goodwill a Master Valuation Account.

> Goodwill, when it appears in the balance sheet at all, is but a master valuation account -- a catch-all into which is thrown both an unenumerated series of items that have the economic, though not necessarily the legal, properties of assets, and an undistributed list of undervaluations of those item listed as assets. It is the valuation account par excellence.[3]

Accountants, as a group, feel that they are not especially prepared or qualified to judge future managerial capabilities, competitive pressure, shifts in consumer attitudes, technological changes and other factors that influence the value of a going business. It is true that they can -- and occasionally do -- use clues from the past to appraise the not inscrutable future, but they have wisely limited their field of operations. Their position is that a continuing series of revaluations of this nature is not necessary and may prove to be more misleading than useful. The problem becomes critical when a client, or user of information, is interested in selling or buying an entire business, or some share in it. Accountants argue that the man most interested -- usually the one who stands to gain or lose -- may use his own judgments and apply his own effective investment or discount rates. Purchase and sale of stocks imply specialized valuations of entire businesses, and it seems that reporting the accountants' views on such valuation matters might be an important service of the profession. The accountant may decline, with reasonable grace, on the basis that his competence to appraise future tariff trends, rumors of war, demand conditions, and a multitude of other variables, hardly supports a professional opinion. What then is the accountants' role in the valuation of a firm? Are his reports of any use to those who make these decisions? Is his service advisory? If so, in what directions may his advice prove to be beneficial? It is the purpose of this essay to set forth tentative generalizations that may serve as provisional answers to these questions.

Other than carefully prepared income and balance sheets, the chief contribution that an accountant makes toward the valuation of a

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[2] Accounting Theory (New York: Ronald Press Company, 1922), p. p. 310. Paton's inclusion of all intangibles may be a little too broad, and his penchant for animistic explanations is clearly evident.

[3] John B. Canning, The Economics of Accountancy (New York: Ronald Press Company, 1929), pp. 42-43. Canning's concern with accounting dependence on legal relationships is suggested in this quotation.

firm is mainly advisory. He helps with the arithmetic, to be sure, but he should be in a position to direct attention to pertinent factors that might otherwise be overlooked, to collect rates of earnings for similar firms and alternative investments, and to appraise the sources of past earning power. In a few instances accountants are asked to arrive at an "equitable" valuation to be used as a basis for settlement among clients. In these cases he may supply his own estimates of future conditions and select an appropriate discount rate. It is highly doubtful whether these estimates are a part of accounting in any sense of the word, and the man who makes them is undoubtedly acting as an individual and not as a professional accountant.

It is obvious that goodwill may be defined in numerous ways. Perhaps the definition that has the simplest operational content explicates goodwill as the difference between the amount paid for a business and the sum of the assets (exclusive of goodwill) at current values. This definition does not need any accompanying assumptions about excess earning power or super profits. The reasons why the purchase price is above the current value of the assets may be numerous; for example, the difference may be due to stupidity on the buyers' side or shrewdness on the part of the seller. (If stupidity is evident, immediate writeoff as a loss is required - comments on goodwill are not relevant.) From this point of view it is possible to have goodwill in a firm that makes no profit and is not expected to make any profit, for goodwill is thus partially determined by the amount paid for the business. Adoption of this measurement rule means that goodwill is not independently valued, and its value is not a partial determinant of the purchasing price.[4]

Unfortunately most accountants do not have an unobstructed view of the future and are accordingly reduced to searching the past for uniformities that may be combined and projected to reveal the probable course of events. This combination and projection is tricky business. Some past uniformities may be expected to continue, but it is possible to expect high future profits in spite of low demonstrated past earnings. This combination highlights the fact that the valuation of a business involves expected future prospects and that the past earnings record is only one (and sometimes a relatively minor) factor useful for estimating the future. In some cases past performance reports need to be modified or even inverted to prevent them from doing more harm than good.

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[4] "Thus, the goodwill of a bankrupt concern was at one time sold for a million dollars....Kester speaks of this as dormant or latent goodwill which he defines as the 'excess earning power that would exist if it were not for poor management...which the new management will remove.'" Henry Rand Hatfield, Accounting: Its Principles and Problems (New York: D. Appleton-Century Company, Incorporated, 1927), p. 122. See Roy B. Kester, Accounting, Theory and Practice, II (New York: Ronald Press Co., 1925), p. 357. J. C. Bonbright also points out that many courts have observed goodwill in bankrupt concerns. See The Valuation of Property II(New York: McGraw-Hill Book Company, Inc., 1937) pp. 755-756.

Nevertheless, there is a certain danger in using the concept of "latent goodwill." If the expected future profits are due to the ability of the new owners, one may wonder why they find it necessary to share the capitalized value of this ability with the old owners. In other words why should rational, profit-seeking businessmen pay the present owners for abilities that these current owners do not possess and therefore cannot possibly transfer? In fact, the prospective owners may be willing to pay a premium to prevent the demonstrated lack of ability from being transferred.

It may be contended that the new owners wish to have the existing firm as a vehicle for exercising their own abilities. But why should they be willing to pay more than the current value of the assets for this opportunity? There may be some going value in the sense that the new owners can begin to exercise their abilities at once instead of waiting until new facilities are made ready and put into operation. Thus, an aggressive young lawyer may buy an existing practice in order to begin his expansion from the existing amount of business instead of from a zero base. The maximum payment would seem to be equal to the discounted value of the higher volume of business for as long as it exists. The increased earnings are "excess" or "super" only in the sense that they are higher than they would otherwise have been.

It should now be clear that goodwill need not be defined in terms of valuation techniques that include expected future earning power. For the immediate discussion let us assume that goodwill is to be defined as a master valuation account and is associated with expected future earnings. Past earnings may be useful as a guide for estimating future performance, and past reported earnings may be even more useful if they are modified in certain directions. However, some questions remain. Why for example do accountants usually deduct an imputed manager's salary from past earnings? Why is depreciation often recomputed? How many past years are to be considered?

If the expected future net is not equal to a reasonable salary for the owner-manager, the business is assumed to have no goodwill even though the total value may be greater than the total current replacement value of the individual assets. The buyer is then purchasing the job. If job opportunities are numerous at the imputed salary, the salary is an alternative (opportunity) cost, and expected earnings equal only to this opportunity cost would not support a higher valuation. In times of severe depression, however, there may be few other job opportunities, and the buyer may be willing to pay handsomely for an opportunity to work. The business may yield a wage and thus have considerable value in excess of the current value of the assets. In the interests of useful classification most accountants insist on separating the value of the job from the value of the business.

It must be emphasized that expectations of the future are usually relevant to valuation and are ordinarily conduct determining. Thus, past reports, if they are to be used at all, should be modified for expected changes in any direction. Specific assets are usually valued at current market prices relevant to the buyer. Depreciation is therefore recalculated on a current-cost basis. The depreciation in past earnings

reports may bear no relationship to the depreciation charge that is appropriate for the future owners who are buying the fixed assets at current valuations. Therefore past earnings are modified for this factor to provide a better springboard for appraising future earnings prospects.

How many past year's earnings should be considered? The answer seems simple indeed. The appropriate number of periods is the number that yields the best basis for predicting the future. The ill-considered criticism that accounting is always looking in the wrong direction should not be allowed to instill feelings of guilt. Information from the future is a contradiction in terms and can never be relevant to anything; our *entire* basis for prediction and expectation is derived from experience -- and experience is all in the past. These obvious statements are repeated again, because of the widespread feeling that certain disciplines of the social sciences have more direct access to the secrets of the future. Certainly accountants look to the past for guidance, and so do all other individuals except charlatans and practitioners of the occult "sciences."

Inasmuch as valuation requires judgments about the future, men of equally good will may differ widely in valuing an enterprise. The buyer might make a goodwill computation that is entirely different from that derived by the seller. The buyer, drawing on his own pool of experience, sees the *new* business with his own super managerial ability involved. The seller draws on a different set of experiences, looks to a different set of alternatives, applies different measurement rules and a different intelligence, and arrives at different valuations. Whose expectations shall govern? Perhaps the buyer is willing to share his own (expected!) super ability with the seller and base his price on his expectations. Instead the buyer may estimate the future income of a business with only ordinary managerial ability and value the concern on that basis.

The seller may also appraise the value of his business in terms of expected earning power with ordinary management, although it is reasonable to suppose that he will value his own superior ability and include it in the value of the concern if past reported earnings support it. At any rate, he may be expected to try to get as much as he can. Thus there is a range of valuations for bargaining and the actual price may be anywhere within the range or, if some irrationality or non-obvious objectives are assumed, even outside the limits of the range. If goodwill is then defined as the difference between the selling price of the business and the current value of net assets, the amount of goodwill recognized may reflect *neither* the buyer's or seller's judgment of the worth of the business. The actual amount may even have been determined irrationally, in which case acceptable criteria for subsequent accountability are difficult to establish. Before the purchase, the accountant has the important duty of calling relevant factors to his client's attention, and he may submit a bargaining range that is consistent with his client's aspirations.

Normally the accountant attempts to assign current valuations to each tangible asset and to all intangibles *except* goodwill. These at-

tempts at imputation are made with the hope that major contributing factors to past earnings may be isolated and their expected contribution projected to the future. For example, it may be obvious that a major reason for above-average past earnings is a patent whose cost to the present owners is small and whose services may terminate in 2 years. It seems misleading to treat the patent as practically valueless, bury its value in a catchall account with goodwill, and amortize the hidden value as the goodwill is written off. The accountant prefers to assume that the patent is purchased at its current value and that the future expected profits should be burdened with an appropriate amount (based on expected benefits) for patent amortization. The individual writeoff reduces the estimates of future profits by a capital consumption charge based on current valuations. For this reason accountants exercise special care with specific imputations.

Unfortunately it is often contended that one reason for the existence of goodwill (excess value) may be the excellent location of the firm. This contention requires a new and strange definition of goodwill that is unsatisfactory. If the location was purchased on favorable terms, the buyer should include the site at its current value. Normally sites will not be depreciated and should contribute to earnings for an indefinite period. If, on the other hand, the site is carried on a long-term lease, the lease may be extremely valuable because the landlord for some reason did not exact the full economic rent. Clearly original pre-payments of future rents may be poor criteria of value, and businessmen are often justified in paying handsomely for the transfer of a favorable leasing agreement. Accountants now are agreed that such service potentials deserve status as individual assets.

The same line of argument may be applied to buildings, franchises, secret formulas, trade marks, and perhaps dealer outlets. In each case current values may be imputed and future expected income decreased for amortization of these specific assets. It should be remembered that accountants traditionally do not treat all valuable things and relationships as assets, e.g., senility of competitors, and the total value (even if crudely estimated) of these items usually is the amount of goodwill that is recorded. In rare instances it may be possible to assign the entire cost to specific assets, while at the other extreme it might be possible to assign no cost to individual assets and to treat the entire value of the firm as goodwill.

A number of accountants include promotional and general developmental costs in the computation of goodwill. The inclusion of a number of indirectly related items in any classification tends to decrease the sharpness of the classification, and in this case the subsequent treatment of the total may not be appropriate for the individual items. It is true that developmental costs are sometimes expensed in the period of expenditure and are not carried among the assets of the firm. This custom is unfortunate, for there are usually services to be received from these expenditures, and they are valuable considerations that often add specifically to the value of the firm. It is, therefore, preferable to value developmental items separately and to include them as a separable item

among the other specific assets to be carried at current values.[5]

Accountants for some reason have looked with suspicion on firms that carry development costs as assets, yet in some lines of business the value of such items is considerable. For example, suppose that a firm furnishes background music to restaurants, markets, etc., and spends two years in developing locations. Suppose also that a competing firm would find it necessary to operate at a loss or at a small profit for a year before procuring comparable locations. As pointed out above, prospective operators should be willing to pay something for these established connections, and the developed locations may have substantial value although the existing firm is operating at a loss. Excess earning power need not be presented to establish value to the purchasing organization. It appears that this kind of value is a type that accountants seldom record as an asset, even though the value has been added (established) and must be considered when the worth of the firm is to be calculated.

The subsequent treatment of this type of asset need not be consistent with that used for goodwill. The benefits from development costs should persist as long as services from the locations, dealer outlets, etc., are forthcoming. Such benefits will normally not persist forever, and it therefore seems unreasonable to carry such costs indefinitely without amortization. The usual accounting recommendation is to take the write-off against the future earnings of the new organization as the services are rendered.

A variation of the developmental-cost problem sometimes arises when the market is large enough to support only one business organization of the particular kind. A prospective businessman has the alternatives of purchasing an existing firm, of competing with the hope of

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[5] Some accountants apparently hold that such items should remain in goodwill. For example, Robert H. Nelson, "The Momentum Theory of Goodwill," The Accounting Review, October, 1953, pp. 491-499. Schmalenbach the intellectual father of German accounting takes an extreme view. "...the value of a business does not equal the total of the individual parts. The value of a business depends upon its suitability for the manufacture or sale of useful things. If a collection of buildings, machines, and stocks are needed for this, then there is a collective value. As long as they are tied up in the factory there can be no talk about individual values....Assuming that we could find out the exact cost of the asset 'organization,' and would add it to the values of the other assets, we still would not know the value of the business." Dynamic Accounting, translated by G. W. Murphy and Kenneth S. Most (London: Gee and Company Limited, 1959), pp. 26, 28. Many of Schmalenbach's ideas can be traced to his writing in the early decades of the twentieth century.

forcing the existing firm out of business, or of seeking a location elsewhere. If an attempt is made to force the established firm from the field, losses may be sustained by both for a considerable length of time. Regardless of the past earnings record of the existing firm, it may be profitable for the newcomer to pay more than the current value of tangible assets rather than suffer prolonged losses while forcing a stubborn competitor from the field. From one point of view, payments of this nature are equivalent to sharing expected future profits with the retiring owners. The asset therefore takes the form of relief from competition -- a cost of procuring monopoly rights.

The possibility of abnormal profits due to successful trading on the equity remains to be considered. Accountants have discussed the use of rate of return on total assets employed when only the stockholders' interest is purchased, but most of them have neglected the valuation problem arising from trading with capital furnished by long-term creditors.

At first sight it seems that the capitalized value of a firm should not be affected by the presence of outstanding obligations. The rates to bondholders are usually lower than the rates used for capitalizing total earnings, but the presence of prior claims tends to increase the risk for residual equity holders. As a result, the discount rate (desired yield rate) in the presence of bonded indebtedness should be higher than it would be if no bonds were involved. It seems therefore, that the difference in discount rates should recognize the difference in risk and the stock valuations should be approximately the same whether the bonds are continued or retired -- the difference in risk would be arbitraged.

The above argument in its extreme form denies the possibility of profit or loss from trading on the equity. However, to assume that bondholders are omniscient enough to require a rate of return at all time exactly in line with the risks involved is certainly not warranted. A series of longterm bonds at rates substantially lower than current rates for similar risks may be a valuable property right to the stockholders of the firm and should be considered in valuing the residual interest. In fact a case can be made for treating such favorable contracts as assets and assigning current values to them. The writeoff can then be related to a definite period of benefit and not buried in a composite writeoff of goodwill.

Valuation complications resulting from trading on the equity have been given special attention by Paton. He has been concerned with implicit interest on non-interest bearing payables and has advocated deducting such implicit interest from estimated future earnings. This recommendation has merit if one assumes that the new owners will make future purchases for cash and thereby procure discounts equal to the implicit interest, or if one attempts to remove all capital costs from future earnings. Paton has also been skeptical of the long-term advantage of trading on the equity to residual owners.

> There is some evidence, incidentally, that the possibility of increasing the amount of income available to a residual interest through the issue of bonds and preferred stock is more limited than has generally been assumed, and that opportunities of this character are likely to be temporary phenomena.[6]

Amortization Considerations

Past and even current accounting theories regarding the disposition of goodwill are hopelessly inadequate and are a serious indictment of the profession. Once goodwill is established on the books, the client within broad limits may write it off immediately; carry it as an asset indefinitely; write off any part of it; make the writeoff against current earnings; or in some cases make the writeoff against retained earnings. If he meets the preliminary requirements of quasi-reorganization, he may make the charge to something called "reduction surplus." The public accountant finds it difficult to insist on a definite procedure, for "substantial authoritative opinion" may be cited for the above procedures. He may insist that the account not be written up without additional purchases or formal appraisal, but otherwise his freedom is practically unlimited. Surely a consistent doctrine for disposing of recognized goodwill can be developed.[7]

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[6] W. A. Paton, (ed.), The Accountant's Handbook (New York: Ronald Press Company, 1949), p. 872. See also his Advanced Accounting (New York: The Macmillan Company, 1941). This topic has also received recent attention from some economists. See David Durand, Costs of Debt and Equity Funds for Business (New York: National Bureau of Economic Research) and "The Cost of Capital in an Imperfect Market: A Reply to Modigliani and Miller," The American Economic Review, June, 1959. Franco Modigliani and Merton H. Miller, "The Cost of Capital, Corporation Finance, and the Theory of Investment," The American Economic Review, June, 1958.

[7] Accounting Research Bulletin Number 43, op. cit., offers a beacon with extremely low candlepower. "Lump-sum write-offs of intangibles should not be made to earned surplus immediately after acquisition, nor should intangibles be charged against capital surplus." (p. 40) The more general prescriptions are: "When it becomes reasonably evident that the term of existence of a type (b) intangible including goodwill has become limited and that it has therefore become a type (a) intangible, its cost should be amortized by systematic charges in the income statement over the estimated remaining period of usefulness. If, however, the period of amortization is relatively short so that misleading inferences might be drawn as a result of inclusion of substantial charges in the income statement a partial write-down may be made by a charge to earned surplus, and the rest of the cost may be amortized over the remaining period of usefulness.

"When a corporation decides that a type (b) intangible may not

The Gold Dust case may be reviewed to illustrate the past inadequacies of accounting procedures in this area. On August 31, 1928, the Gold Dust Corporation presented a balance sheet in which Goodwill was carried at one dollar -- an accepted practice at that time -- and Land, Buildings, Machinery and Equipment were also carried at one dollar. The analysis of surplus for 1926 showed "Goodwill written off $1,447,205.20" and the analysis for 1927 contained "Provision for adjustment of plant value $2,510,971.89." The annual report of the president for the fiscal year ending August 31, 1928, contained:

> In view of the available surplus and of the fact that the corporation carries its most valuable asset, viz., its goodwill at $1, and also because of the uncertain market value of industrial plants, it was concluded that it would be entirely appropriate for the corporation to carry its plants in a similar manner as its goodwill, viz., at the nominal value of $1.

Accountants, financiers, and officials of the stock exchange were horrified at such unacceptable accounting procedures, but the horrification was due to the unorthodox treatment of fixed assets and not to the slipshod method of handling goodwill.[8]

The president obviously considered the intangible factors to be more valuable than the plant and it is disappointing that he did not follow his statement with remarks along the following lines. Obviously accountants are not concerned with economic values for balance sheet purposes or for income measurement. They permit asset reductions of millions without regard to value, and they permit these write-downs to be taken either to current revenues or to retained income. Moreover, with regard to value they are hopelessly inconsistent. They insist on ritualistic and slavish adherence to schemes for amortizing value assigned to physical properties and completely disregard these schemes if the values are attributable to intangible considerations. Perhaps they disregard values and adhere to the convention of matching expired costs with revenues recognized? If so, how is it possible to justify their treatment of goodwill on a cost and revenue basis? Certainly benefit is not used for the criterion of amortization!

There was at that time no satisfactory answer to such questions, and at present our rebuttal to such statements is only slightly improved.

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continue to have value during the entire life of the enterprise it may amortize the cost of such intangible by systematic charges against income despite the fact that there are no present indications of limited existence or loss of value....Such amortization is within the discretion of the company and is not to be regarded as obligatory. The plan of amortization should be reasonable; it should be based on all the surrounding circumstances...." These are operational rules of action for professional men?

[8] Professor Paton, to whom I am indebted for the above information, classified the Gold Dust Case under the heading "Appraisals" with the subheading, "Plant Write Down." Michigan Business Cases, Accounting Series B. (Ann Arbor: Bureau of Business Research, 1934), pp. 66-67.

A few writers have advocated acceptable procedures for goodwill amortization, but the majority of writers and certain governmental agencies have failed to provide practitioners with defensible procedures or even with understanding of the problems involved.

It has been argued that goodwill (rationally determined) results from valuations in excess of values assigned to specific assets. The new owners back their valuations by payments, so that purchased goodwill is usually a legitimate cost representing expected benefits and services otherwise unassigned. It seems then that the cost of these expected services should be written off as the services are received. No other procedure meets the demands of an approach based on matching expired costs with benefits, although several problems arise in this application of the rule.

Suppose, to illustrate, that normal earnings are considered to be $100,000 and that the new owners pay $300,000 for values derived from expected above-normal profits. Suppose also that the profits for the first year before amortization are $180,000. Strict application of the benefit rule seems to indicate a goodwill writeoff of $80,000. If in the second year earnings are $140,000, a goodwill writeoff of $40,000 is indicated. If the firm continues to earn abnormal amounts after the goodwill has been amortized, it is usually assumed that the buyers made a good investment, or extraordinary current managerial ability is now yielding returns, or new valuable non-asset items have been developed.

There are practical objections to writing off goodwill as excess profits are received. It should be observed that the reported profits for the firm will be exactly $100,000 each year as long as net before the goodwill amortization is greater than $100,000. This monotonous reporting is distasteful to some accountants, and various substitutes have been advanced. A straight-line or compound interest writeoff may be defended if a suitable service life can be assigned to the intangible. Usually the goodwill calculation itself gives a clue to the minimum term of service expectations. In some cases the deal is consummated on the basis of a definite number of years' excess earnings. If so, the agreed number of periods may be used for amortization purposes. Other methods of valuing goodwill are often used, but in most of these instances it is possible to discover an implied life. At the worst, estimates of intangible service life should be no more crude than similar estimates for long-lived tangible assets.

To modify the illustration assume that the firm fails to receive the expected advantages (services) during the first years after purchase. The procedure in this case depends on a new judgment regarding the future. The accountant may be convinced that the buyer has made a serious mistake and that future benefits will be less than were originally expected. If so, there is certainly less expected future benefits to support goodwill as an asset, and an immediate partial or complete writeoff is in order. On the other hand, the accountant may decide that the deficiency in services received is temporary and that the expenditure is still probably justified. With this assumption a strict interpretation of the benefit doctrine would require no charge off until the resumption of abnormal earnings. Application of straight-line or compound-interest methods

would normally require systematic amortization regardless of earnings. It is unfortunate that accountants sometimes adhere closely to formulas such as straight-line when the results are clearly at variance with the flow of benefits. Certainly there is little or no reason for an extremely rigid application of such formulas when their application violates conventions that are generally considered to be more fundamental.

One further comment on amortization of goodwill may be offered. Many accountants have argued that purchased goodwill is often replaced by a similar asset arising from subsequent efforts of the new owners, and it is then contended that amortization is unnecessary as long as profits remain satisfactory. This contention is similar to that employed by defenders of the renewal (replacement) method of depreciation. Advocates of the renewal depreciation procedure maintain that there is no depreciation other than replacement costs as long as the plant is operating efficiently. The support for non-amortization of purchased goodwill is clearly based on the assumption that future expenditures for maintaining the intangible relationships will be expensed and that the original cost is not subject to writeoff as long as profits are high enough to support the carrying value. Unless one is prepared to support the replacement method of depreciation he should be wary of considering purchased goodwill as a permanent asset. In general, a more acceptable approach calls for the amortization of the original expenditure over the period of expected benefit. If these valuable relationships are replaced by new ones, it may be desirable to defer all or some part of the current expenditures and make the writeoff as the services (benefits) are received.[9]

A sharp distinction should be drawn between carrying the original cost of goodwill on the books without change on the one hand and adjusting the master valuation account periodically for changes in enterprise value on the other. It now seems appropriate to ask what possible use can be made of a goodwill figure that was determined, say, twenty years ago and has remained unchanged from that date. It is true that an historical record of what someone acting rationally or irrationally once paid for goodwill is maintained, but in the hands of unso-

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[9] Moonitz and Staehling hold to this view. "...suppose the management of a concern concedes that goodwill originally purchased is expiring; however, by dint of present-day advertising techniques, they are creating new goodwill as fast as the old is disappearing....The goodwill itself should be amortized....in addition, current advertising outlays should be carefully scrutinized, and classified in part as an asset....In this manner, the investment in 'old' goodwill is properly accounted for; so is the investment in advertising." Accounting, an Analysis of Its Problems (Brooklyn: The Foundation Press, Inc., 1952), p. 462. Paton and Paton admit that: "...the goodwill of an enterprise may be in part the result of various types of expenditures which have been absorbed in operating charges..." but "....the estimating of intangible value....can better be accomplished without reference to the costs which may have had a bearing on the creation of such value." Asset Accounting (New York: The Macmillan Company, 1952), pp. 495, 496.

phisticated readers such an historical record may be interpreted as current value and consequently may do more harm than good. Accountants are currently not anxious to accept responsibility for valuations, but carrying original goodwill figures as assets is equivalent to implicit valuation and seems to imply that the current goodwill is at least as valuable as the carrying figure indicates.

In general accountants have not been enthusiastic about valuing the entire business from period to period and adjusting the goodwill account for the difference between the current value of the assets and the value of the entire business.[10] The latter position may or may not be rejected, but it at least represents a positive program and has clearcut objectives. The same cannot be said in behalf of the policy of carrying the original goodwill figure without modification.

Of course, the unamortized book value for goodwill also may not be very useful. Cost of acquired services that have not yet been received may be an acceptable explanation and is as enlightening or unenlightening as the explanation of book value elsewhere in the statements. One word of warning may be in order. Some accountants have advocated the complete and immediate writeoff or goodwill and some other intangibles, because they are not ordinarily relevant for appraising short-term, debt-paying ability. It should be emphasized that an item may not be appropriate for a particular decision and yet may deserve to be preserved because of its possible usefulness in other connections. A systematic writeoff of such items is a necessity of good income reporting, although the results may not be useful for appraising short-term credit prospects.

Accountants feel that goodwill should not be recognized as an asset unless purchased, although unusual promotional charges often may be capitalized and amortized as the expected benefits are received. In connection with partnership rearrangements, however, accountants condone a direct violation of the purchase requirement. Suppose to illustrate that A and B have capital balances of $120,000 and $80,000 respectively and that profits and losses are shared equally. C, an outsider, wishes to purchase an interest in the firm and is admitted upon payment of $150,000 to the firm for a one-third interest in the business including one-third of future profits (and losses) if any. Two assumptions may be made. C may be foolish to pay even book value for his interest. On

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[10] W. A. Paton, (ed.), Accountants' Handbook, op. cit., p. 843, summarizes the viewpoint of Yang (1927) as follows: "Adoption of a policy of estimating and recording intangible values from period to period would not only obscure important relationships and run counter to the essential purposes and functions of accounting, but it would tend to encourage juggling and misrepresentation and would result in balance-sheet totals, little if any more significant and stable than those ~~to~~ which might be obtained by the continuous introduction into the statements of capitalized values as shown by the market for outstanding securities." See also J. M. Yang, Goodwill and Other Intangibles (New York: Ronald Press Company, 1927).

such evidence there is certainly no reason to recognize excess enterprise values (goodwill), although the additional consideration over book value may be regarded as a windfall to A and B.[11]"

If it is reasonable to assume that C acted rationally in paying $150,000, there is evidence that the accountant has failed to report important items or that his valuations are out of line with current values. If the evidence is considered to be satisfactory, one-third of the firm is apparently worth $150,000 so that the implied valuation of the entire firm after C's entrance is $450,000. Inasmuch as total recorded assets are $350,000, it appears that values totaling $100,000 are not reported by the accountant. According to present accounting practices the accountant or his client at his option may or may not recognize these additional values.

Whether or not the additional values should be recorded depends on criteria derived from one's conception of the usefulness of balance-sheet figures in various circumstances. In the past accountants have insisted that such value increases be supported by a bona-fide purchase. However, it is obvious that an extension of the definition of "purchased" must be made before this type of goodwill can qualify. It is possible to posit a new organization that "purchases" the business from the old at the imputed price of $450,000, but this position is hardly adequate to justify a "purchase" of goodwill. It is equally difficult to understand how any of the $100,000 goodwill was "paid for." The new member paid for a part of the current valuation, and this particular part of the value is in fact converted into cash. The $100,000, however, is precisely the excess valuation that was *not* turned into cash. A substantial-change-of-ownership rule appears to offer sufficient justification for revaluation without recourse to some fictitious purchase. A substantial change of ownership tends to upgrade the quality of the evidence by introducing important adverse self-interests into the bargaining arena.

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[11] It is unfortunate that many textbook writers are so anxious to get to the mechanics of partner admission that they neglect the judgment involved in estimating the degree of stupidity or astuteness of the new member. Valuation of an entire business on the evidence of a single transaction can be risky indeed, and the magnitude of the isolated transaction may not be an acceptable criterion. If the entire business is purchased, accountants usually assume astuteness and recognize the need for revised valuations and perhaps recognition of goodwill. If the transaction is for a few shares of stock, no revision is usually made. It should be obvious that big "dealers" can be stupid and that the question of revaluation should depend on more satisfactory criteria.

COMMENTS ON THE DIRECT COSTING CONTROVERSY I

(Non-Income Aspects)

One normally expects the fierce winds of controversy to reduce an intellectual field to barren waste in a decade or two. Such has not been the case in the area of marginal costing, and a number of recent articles have attracted new interest and attention to the subject.[1] Most writers seem to assume that direct costing has carried the day in the decision area of internal management and some are now attempting to establish the superiority of direct costing in the field of income determination.

Clearly this entire area of accounting is in need of serious and relatively unbiased appraisal and review. The present essay is devoted in part to this task. An attempt is made to set the direct-costing discussion in a broad framework that is as wide as the concept of cost itself. What emerges may be construed as a skeptical look at direct costing and a mildly sympathetic discussion of conventional (full-costing) methods. This paper discusses first the problem of "fixed" cost assignment for managerial decisions narrowly defined. The discussion then turns to the income problem and the nature of period costs. Both questions -- in fact the whole affair -- reduces to finding and appraising relevant costs for objectives that are not well defined, decisions whose effects are not readily matched with objectives, and behavior patterns that are not clearly outlined. Furthermore the search is carried out against a background of uncertainty that covers not only the future but also the lack of knowledge about alternatives currently available as well as imperfect knowledge about past uniformities.

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[1] See for example, Charles T. Horngren and George H. Sorter, "'Direct' Costing for External Reporting," *The Accounting Review*, January 1961, pp. 84-03. David Green, Jr., "A Moral to the Direct-Costing Controversy?" *The Journal of Business*, July, 1960, pp. 218-226. Earlier discussions include the following: R. Lee Brummet, "Direct Costing - Should it be a Controversial Issue?" *The Accounting Review*, July, 1955, pp. 439-443. Also *Overhead Costing* (Ann Arbor: Bureau of Business Research, University of Michigan Press, 1957). Samuel R. Hepworth "Direct Costing - The Case Against," *The Accounting Review*, January, 1954, pp. 94-00. Oswald Nielsen "Direct Costing - The Case 'For,'" "*The Accounting Review*, January, 1954, pp. 89-93. Raymond P. Marple, "Direct Costing and the Uses of Cost Data," *The Accounting Review*, July, 1955, pp. 430-438. For a somewhat idealized approach to full costing and the nature of idle-time cost see William L. Ferrara, "Idle Capacity as a Loss - Fact or Fiction," *The Accounting Review*, July, 1960, pp. 490-496.

Two preliminary observations may be emphasized. First, there is no inner logic or other metaphysical force that bids us accept one course of action and reject another. It should be emphasized that a decision to accept or reject a set of cost expiration rules, such as those associated with direct costing, requires careful judgment of needs, reactions, goals and probable consequences. Cost "obviation" for example, is a possible rule for asset recognition that has considerable intuitive appeal. However, there is no compulsion to accept it, and there may be serious disagreement over its scope of application. The second preliminary point emphasizes that decisions are always related to future actions but that the all information comes from the past. Clearly accountants are justified in classifying and preserving selected events from the past so that future decisions can be improved and progress toward goals encouraged.

The final preliminary comment emphasizes that relevant costing is always relevant to some decision to be made by some person or group. Costs (sacrifices) that are changed by taking course A rather than course B are relevant to the choice between them, and meaningful accounting must relate estimated sacrifices to available choices. Why then are costs ever assigned to units, to sources of services (assets) and to periods? The answer is simple enough: decision areas are often related to units, service potentials and periods. Accountants therefore economize their effort by preparing general-purpose calculations clustered around these centers. Additional areas of relevancy may be appropriate for some decisions, and, if so, special cost studies with more appropriate centers may be prepared. All costing rules that use traditional assignment centers should therefore be examined occasionally to find whether the results are still relevant to decisions that need to be made.

Direct costers argue that the accounting appropriate for many management decisions computes product cost (sacrifice) on an incremental basis with the producing environment (initial conditions) given, available, and costless for the decision at hand except for possible value in alternate uses. It is assumed therefore that the regular output of the accounting system should reflect unit (and project) costs on an incremental basis with the increments measured from the base line of whatever facilities exist at the time the decision is faced. Incremental costs will vary widely as base conditions are changed and are subject to all sorts of critical points that tend to destroy comparability except for very limited ranges and conditions. Comparability over wide ranges and under widely differing conditions may be over-stressed, but many accountants do not wish to reduce the field of costing almost entirely to special cost accumulations for special purposes. With some sort of common base and some assumptions about the uniformities of cost behavior, cost accounting in the usual full-costing sense smooths some past irregularities and provides from such a base a benchmark for estimating the future cost of similar projects. Unless there are rules for holding facilities somehow comparable by controlling period costs to provide a more or less stable "establishment" from which to operate, such information is limited primarily to curiosity value, for one can never be sure initial conditions for the future will be similar. A further (and perhaps minor) consideration is that direct costing essentially requires

some managers to give up their old pricing methods and adopt new ones. The new ones may in fact be better than the old ones, but definite superiority of marginal costing in all cases has not been established. Clearly all judgments -- except extremely simple routine ones -- must weigh probable sacrifice against probable benefits. Let us now turn to the benefits and possible sacrifice of abandoning full costing in the decision area of internal management.

It should be clear that each incremental cost decision starts with an assumed set of initial conditions. In some cases these initial conditions are equivalent to a fresh start and the incremental cost of the decision is in fact the total cost. More often, however, a *heritage* problem is involved so that the relevant costs for a particular decision begin with an environment that includes a carryover of facilities and abilities that may be employed. These facilities may or may not be indispensible or even useful for carrying out the decision. Of course the productive facilities themselves can be said to enter the incremental cost decision either directly or indirectly. If they are useful, their usefulness may tend to reduce (obviate) costs, for without the heritage additional costs would presumably be needed to acquire the service. If the carryover facilities are not useful, relevant costs must be measured from a zero base or at least a base that neglects these particular facilities. What needs to be emphasized is that the accountant's costs or past costs in any form may not be an acceptable measure of the amounts by which the incremental decision is affected. This is so likely to be the case that most businessmen tend to assert that the accountant's manipulation of past costs is *always* irrelevant and should *always* be replaced by more direct and cogent estimates. The problem is *not* whether the existence or non-existence of the heritage has any effect on subsequent incremental decisions. This may be stated as a hypothesis and may be a proper subject for empirical study, but the very existence of the organization means that the initial conditions and therefore most incremental decisions are affected by the heritage problem. In fact, fixed establishment costs are always related to incremental decisions in the sense that they provide an environment which makes the incremental decision feasible and worthy of consideration. The relationship is similar to that of a question and answer - the question itself limits the subset of possible answers and puts 'broad limits on conversation that is relevant.' Our problem is to search for clues that may help us determine when, if ever, the influence of existing facilities may be properly measured by manipulation of past cost figures.

It should be possible to conceive of a situation in which every decision is different and begins from a different environmental base. Such a situation would have *no relevant uniformities* and would require a different determination of relevant costs and factors for each decision. With no uniformities there would be no reason to look for past situations that might be similar and therefore offer clues or even shortcuts for future decisions. With this assumption there is little or no reason to accumulate, order, and present costs relevant to past decisions for they are not expected to recur. Thus files of past relevant costs for numerous non-similar decisions would be hardly worth the trouble to accumulate and may well be thrown away. A situation in which all past information is useless is,

of course, a situation of utter chaos, but perhaps the relevant past information that helps meet the future is usually non-cost information. In this case uniformities are expected to persist, but past cost data are assumed to be of little or no help in projecting them.

It is certainly possible for all past cost information to be irrelevant. In some branches of government activity, during times of rapid scientific and technical change, practically each item and every expenditure is incremental and is important only with respect to its operational efficiency and its fund requirements. Every project is essentially different and builds on whatever facilities and knowhow happen to exist at the time. Inasmuch as such projects will probably never be undertaken again, there seems to be no reason to assign values to the heritage and to include such values in the cost of the new projects. Thus, it is not thought to be essential to compute the cost of each project as if it were started from scratch with no heritage of available facilities.[2]

The arguments for non-incremental cost assignments at the managerial level must therefore rest on the assumption that there is enough pattern in the behavior of costs to make it desirable to keep historical records of past costs.

There is however room for argument about cost allocation at several other levels. First, one may argue that the knowledge of the past need not be in accounting form before it is usable. It may be possible, for example, to use information in some intuitive and even an unsystematic manner. Second, it may be admitted that cost assignments on a past basis could conceivably be of some use in estimating the future, but that certain past records need not be used in the routine output of the accounting system. It may be satisfactory, for example to make such cost assignments and allocations only on an intermittent basis as new decisions seem to require them. The position is held by typical direct costers. They wish to put the routine costing process on an incremental basis and to add full costing studies on an intermittent basis when desired.

Clearly there is no reason for assigning costs or revenues (or ~~of~~ anything else) unless it is thought that the nature of the activity is recurring enough to make the past figures in some way useful for making decisions that influence future action. Thus, the articles of faith for accounting are bound up with the belief that there are some uniformities for which past results will prove useful. A subsequent problem is whether in particular cases the rules of assignment normally used by accountants accomplish the purposes better or worse than possible alternative rules. This evaluation requires, of course, an estimate of the

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[2] Clearly advancement toward objectives must be considered and the progress relative to budget constraints, time restrictions, etc., should be revealed. It is tempting to argue that the costs that are relevant within the budget framework are the sacrifices of accomplishments foregone in the projects that had to be rejected in order to pursue those we do pursue. Yet if one never expects to follow the same path again, past mistakes too (alternatives foregone) become irrelevant.

recurring decisions, the behavioral reaction patterns of those who make the decisions, the possibilities of "educating" them to alternative plan -- dynamic education -- the availability of past information to be assigned and perhaps others considerations. It may be argued that accounting must be an effective servant to the established patterns, for its procedures have been determined and honed by the historical selectivity of the decision groups -- a kind of social Darwinism. Those procedures that were not useful and tended not to "pay their way" were eliminated from the core of gathering and reporting activities and those that survived tended to be those that have in fact proved useful. This position seems to have intuitive merit and the burden of proof seems to be on those who argue that the procedure should be changed. Criticism of this position may take several forms. For example, it may be argued that businessmen are not using the "right" rules for making decisions and that a serious overhauling process is in order. A slight variation asserts that "times" have changed and that the old decision rules and their information bases are inadequate, or it may even be argued that accountants have influenced businessmen to use rules whose merit is primarily that accountants are able to get the necessary information. It is true that in the past accountants have been somewhat inflexible, but to believe that they have held generations of businessmen in bondage to their calculating methods seems to be far fetched.

Let us return again to the extreme example of a government agency that renders a research service and depends entirely on government budget appropriations for funds. This situation presents the strongest case against cost allocation in the traditional sense. Each new project may be assumed to be largely independent of all projects that have gone before. In most cases the new jobs will make use of existing knowledge, research and other carryover facilities. It is assumed here that all past costs are irrelevant (are not changed by the decision) and that each new projected program begins with what is in existence and all plans consider only the necessary incremental expenditures. The incremental cost of project A, for example, might be completely different if management were starting with the residue of knowledge and equipment that he might have had if he had in fact pursued a different policy in the past, but all such past considerations are assumed to be irrelevant and are neglected. Notice that we can neglect past costs, but we must consider the legacy of the past in knowledge and other resources.

In the above case, each project is estimated on an incremental basis beginning where we are at the time. The ordering of projects may become important and the costs relevant to program A may be different if we decide to undertake project B first. Thus the problem of minimizing cost for a series of planned activities may require consideration of several bases from which incremental costs are calculated. Otherwise, the procedure seems to be relatively simple: we attempt to estimate the added benefit to be received from an incremental project and then attempt to estimate the incremental costs including the sacrifice from not using the funds elsewhere. Further, it may sometimes be assumed that past decisions are not to be reviewed with regard to their yield of actual benefits or their past costs. (A less restrictive assumption is that if such a comparison is to be made, it can proceed as a problem in cost analysis on an intermittent basis.) That is, there does not seem to be

enough in common among the projects to justify keeping past results to help estimate the cost of future activities. Of course, if there is no similarity at all among projects there is little or no basis for estimating even incremental costs.

It seems evident that the wisdom for estimating future costs of these projects must come from somewhere. Some uniformity is necessary even for incremental costing. If there is some degree of uniformity, it might be useful to compute past costs from a fixed horizon that is independent of what other resources happens to be lying around and available. Estimates of future jobs then could consider incremental costs by using the derived figures for similar jobs and "allowing" for the presence of resources available from past operations. Note that if no costs are available for these available resources which form the horizon or starting floor, the procedure will not work the other way. We can estimate the incremental cost, but without costs of the available resources we do not know how much to "allow." At first glance it seems that the allowance should be the saving from having the facilities -- the costs obviated -- but the obviation is the entire amount of replacement cost -- and it is incremental to each future decision.[3]

It has been argued that in the case above the only relevant considerations are the funds (budget availability) and probability of attaining objectives sufficient to justify the effort. Clearly the budget availability must consider sacrifice elsewhere, and equally clearly someone must be able to assemble these estimates of sacrifice for new projects, and they should be accurate enough to keep from mis-allocating resources by selecting the wrong projects in terms of objectives and future costs. Resource allocation and combination, and project selection from a limited budget require dynamic programming with some accuracy. That is to say, with a fixed overall budget, the problem is to select those products that will contribute most toward objectives, and except for the periodicity of the budget allocation, decision makers are not concerned with periodic statements of progress in terms of cost. Their concern is in terms of accomplishment of objectives and of funds still available, and keeping within cost allowances may be only a minor objective. To summarize the position: It is argued that generalized or standardized "start-from-scratch" approaches are not necessary and that the costs relevant are the incremental costs of each project in terms of the budget available. There is however, some reason for assigning expenditures to budget appropriations so that the amounts still available for use may be reported. This tracing of expenditures is also cost ac-

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[3] The notion of measuring (defining) benefits received in terms of costs obviated or saved is advanced by Horngren, Sorter and Green. In some cases this substitution has merit and it certainly tends to tighten the loose rules for benefit measurements. But from one point of view the existence of any useful facilities obviates employing substitutes. Some smoothing is also necessary for making these rules operational. The cost obviation thesis is thus a type of replacement cost substitution (often lumpy) for the usual smoothed historical cost allocation.

counting in the sense that historical costs are assigned for a definite purpose, but it is peculiar in that it is the difference or unexpended balance that is important instead of the traditional relating of sacrifice to benefits for short time periods. Clearly one objective is that of control, for the accuracy of past estimates (even though they are made from the prevailing resource availability) are assumed to be important for the future and are being checked project by project with allowances for changes in specifications and other changes that require additional estimates. Thus some control may be exercised on estimators, and the entire area of aspiration levels and penalties for failure is appropriate. The control feature is exercised in another way in that the assignment of past costs along with some psychological barriers to appropriation increases may help control expenditures and keep those in charge from treating funds as free goods, e.g., affect their future behavior. (Unfortunately such controls sometimes backfire and lead to waste of funds or extremely high estimates.) Thus it must be concluded that the chief function of assigning past cost is one of trying to get some measure of reliability in future estimating and perhaps encouraging a preferable pattern of future spending.

Thus it is clear that the period involved in one decision is not the length of the decision making act, nor the length of the physical life of the items procured, but instead its life is measured in terms of all future decisions affected. The value of unliquidated decisions should therefore be measured in dynamic programming terms. A past decision binds us in the future through limiting and changing later decisions that would have been feasible or different if the past decision had been otherwise. Note, for example, the original decision to go into business and the host of future decisions that follow from it or are influenced by it. With the original going-into-business decision and numerous later decisions not to go out of business, the making of numerous future decisions becomes necessary and their pattern is to some degree set -- i.e., certain constraints are imposed. The accountant may be helpful in gathering information that will make the task of assigning carryover values easier. He attempts to do so by assigning original cost according to estimates of benefits received and expected. He smoothes the original cost and tries to match the expired portion with benefits. Other rules for determining expiration and carryover values are clearly possible. Cost obviation may serve as a criterion for assignment. Some smoothing would seem to be necessary; otherwise almost the entire amount of replacement cost of fixed facilities might be obviated by not making the first (and other critical) units.

In the previous discussion we have argued that the cost of existing facilities may be irrelevant even though the facilities themselves are highly useful and have emphasized the futility of accounting for irrelevant costs. It seems appropriate to point out that "relevancy" is a highly debatable term in a context of changing activities. One may begin by asking when, if ever, it seems desirable to accumulate unit or project costs with the assumption that the project is starting from scratch -- beginning with no inheritance. Then one may ask when, if ever, it is desirable to begin from some other uniform base such as that afforded by some sort of assumed flow of period or establishment costs.

In one sense the entire cost of a plant is incremental to the decision to begin business and all replacements are incremental and relevant to the decision to remain in business. Thus it is possible to argue that each plant replacement is a part of the incremental cost of all the future products to be produced over the life of the plant. If the "unit" is considered to be the entire output of the generation of plant, the period costs including depreciation become incremental unit costs. It must be conceded therefore that the unit selected often influences the relevancy of costs.

Manipulation of the unit to show that period costs become relevant to some kinds of units is not fatal to the direct-costing thesis. First, and least important, it may be argued that special calculations at appropriate times are all that are necessary and that the basis for regular routine accounting should be some other kind of unit. But what kind of production unit or time unit? What are the criteria for deciding? How do we decide, for example, that the unit basis breaks down and some stage-of-completion basis should be substituted? Clearly for determining income there is some relation between the units on which profit is recorded and the length of the time period. But what is it? How can it be measured? And how does it affect the non-income aspects of direct costing?

The relevancy of costs for internal management purposes must be related to the decision and not necessarily to the unit or to the period. In this context cost would be related to the period only when the decision relates in some fashion to periods. Period costs are related to periods not because they are somehow fundamentally or intuitively related to time intervals. They should be related to periods because some decision or set of decisions can be improved by clustering costs about periods. Which managerial decisions are improved by this type of cluster? And does the clustering need to be made in the usual output of the system or can it be done intermittently as the occasion demands?

The point to be emphasized is that it is not the unit or the period that determines relevancy. It is the decision that is the center of activity and it is decision requirements operating in a behavioral context that determine the relevancy or non-relevancy of information. Periods and irregular segments of the time continuum do enter decisions especially in income matters, but indiscriminate dumping of non-product costs into a period-cost hopper seems to be a crude application.

One may argue that decisions of certain types recur more often and the utility of having pertinent information available for them is greater. It follows then that the information should be clustered about any center that might aid such decisions. The direct coster may feel, for example, that utility is optimized if costs of keeping long-run facilities intact and standing ready to produce may be dumped on a period basis where they do little harm (and probably little good) in order to isolate the costs that are relevant to the decision to raise or lower the shortrun stream of output. This decision may be a good one, but is not the only available one. The assumption that the primary purpose of routine costing is to provide continuing information on incremental costs

from a going concern baseline, and the tendency to relegate information for alternative uses to intermittent special-purpose accumulation seem to underlie the direct cost position. Cost accountants and businessmen have long been committed to a different set of assumptions. Let us review them briefly.

The full-costing approach is based on the assumption that a cost system should include in its routine output a smoothed approximation of unit costs if management were to start from scratch. The decision area is assumed to be met by selecting some kind of production unit. In practice the actual units selected are considerably smaller than the output for one generation of plant, and the heritage costs that would be direct and incremental to the entire output are smoothed by being apportioned in some fashion to the smaller units that are selected. The resulting unit or project cost is then composed of the smoothed incremental costs that would be necessary from all kinds of assumed horizons. Among these horizons is the smoothed incremental cost measured from a zero level of carryover facilities, e.g., with no costless heritage of facilities available. The resulting unit cost of running an extra train from Los Angeles to Chicago, for example, would not be the sum of the incremental costs of carrying the passengers if the train were already running, but it will include this total. The total, moreover, will not be equal to the total incremental cost of adding the individual cars that make up the entire train, but it will include this total. Moreover, the total cost will not include all the costs of providing the entire assemblage of facilities. The total cost of transporting a passenger, for example, will include (perhaps separated and explicitly stated) the incremental cost of transporting him if there were unused car and train capacity. It will include a smoothed amount of the incremental car cost. The incremental cost of adding the train will be smoothed and applied over the "normal" trainload of passengers. Finally the incremental cost of building the entire railway system for handling thousands of trains and millions of customers will be smoothed and distributed to passenger cost.

We may now speculate on the relative usefulness of each approach. Is there any possible usefulness in knowing that the incremental cost of manufacturing an additional crankshaft with all factory facilities furnished and costless in $8.00 and in addition knowing that the cost of providing the environment for manufacturing it -- smoothed -- is a further $7.00? Now if the decision area is clearly defined with no interdependence of decisions among projects or in time, the addition would seem to be unnecessary. A single element from the domain of cost would be associated with a single decision from the range of possible activities. Such is rarely the case.

The direct costing approach consigns the sum of the seven-dollar items to period costs and views the decision involved by using a short-run incremental rule for each decision as if it is more or less independent of others. The relevancy of costs (except in the case of period costs) is defined in this fashion.

The full costing convention assumes that the smoothing of heritage costs over product permits significant comparisons (in some directions at least) more quickly than direct costing. Comparison of selling prices with full costs by products or by different plants may yield quicker and more direct comparisons than direct costing. In the latter case such comparisons may be made intermittently or on a period basis. Notice, however, the implied assumption that the degree of recovery per period will normally be slower and less informative than degree of recovery per unit. The case is not entirely clearcut.

We may speculate at length as to whether pricing policy would be more desirable for the enterprise and for society if managers would accumulate contributions for time periods and compare the totals with period costs. A similar comparison on a unit basis may be faster, but the periodic comparison has the advantage of giving explicit consideration to the turnover factor. The unit comparison considers the turnover factor indirectly by smoothing at some sort of desired level of production and by assuming that production and deliveries are in phase.

It is extremely difficult to render a judgment as to the superiority of either method in the area of pricing. Some businessmen may have a good intuitive grasp of their demand elasticities and may be able to neglect the temporal relationships that may exist between today's prices and tomorrow's demand. Other businessmen may have a preference for price stability and wish to utilize smoothed longrun costs to aid such a policy by introducing psychological restraints to price cutting. This question has been discussed elsewhere and will not detain us here except to serve as a reminder that adverse effects of today's actions on tomorrow's prospects must be included in the relevant costs of all current decisions. This neglect has been the undoing of numerous economists who have advocated the equation of MC and MR for each short period of time and have unquestioningly assumed independence among periods and therefore that such behavior must be appropriate for the longrun. Dynamic programming now supports the older technique from the calculus of variations and helps to emphasize periodic interdependence and shortcomings in the shortrun rule.

A further point deserves mention. The usual common-cost problem in which there is no freedom to vary units is related to direct costing. (We are neglecting the obvious incremental relationship when freedom to vary the joint products is available.) In the genuine common-cost case it is difficult to identify the elements of production with individual elements of cost. The problem here as elsewhere arises -- at least in part -- because the costing unit is finer than the obvious effect of the incremental cost impulse. Again we are faced with the decision of smoothing or not smoothing. Should one record only obviously separable costs as unit costs and treat the common costs before splitoff as establishment (period) costs? Clearly we may extend the concept of period costs to cover keeping the establishment ready for service and also to include keeping a supply of product available at the splitoff point, i.e., treat the common costs as period costs. It is true that these costs are related to the period only in the most indirect fashion, but this situation also exists for practically all period costs. These costs are

generally related more nearly with the provision of certain facilities (maintaining the establishment) than with the period of operation.

It seems appropriate to conclude with a note on the similarity of period costing to the renewal (replacement) method of depreciation. Both treat current expenditures to provide certain specified facilities intact and available as expenses of the period. Neither is concerned with units other than time intervals related to the general level of facilities. Piecemeal utilization of specific units of equipment or units of production as related to non-temporal benefits received is neglected. The replacement depreciation method is directly related to providing a basic stream of services, but it does not get the issue confused by trying to establish some sort of attachment with periods in keeping with some vague feeling that costs automatically attach to time intervals. Given the original facility level, the costs of replacements are necessary to preserve the base (plant establishment) and may be treated as if they are period costs. However, the last step is not necessary, for one may defend replacement depreciation and still argue for the inclusion of such depreciation in unit cost.

THE DIRECT-COSTING CONTROVERSY II

(Income Measurement)

Members of the accounting profession were extremely slow to assimilate the marginal technique into their general thinking with regard to price and output problems. Many cost accountants from the turn of the century had made use of differential cost techniques for special purposes but had not generalized the approach for broad output decisions. The younger generation of accountants were far better trained in the techniques of enterprise economics and have been leaders in the drive to get the incremental approach accepted more widely. The term "direct costing," while not a happy choice in some respects, exhibited independence from the economist's better chosen marginal costing and related the new concept to the well-entrenched familiar and vaguely related concept of direct cost. A powerful force tending to encourage direct costing undoubtedly resulted from the shortcomings of conventional costing for income determination and budgeting. A number of discussions of the income aspects of the problem have been published recently, and this essay is devoted to a somewhat detailed (and seemingly endless) discussion of the income effects of direct costing.

As a basis for discussion it is assumed that the usual economists' definition of income is appropriate. This definition is related to certain kinds of increases in service potentials (prospects). The accountants' addition of realization criteria is omitted, and it is assumed that in the absence of direct valuation, cost should be written off when the benefit has been received (service rendered) and the value has been given up and has passed outside the boundaries of the organization. It should be pointed out at this stage that the identification of benefits to be received is sometimes more difficult than the subsequent problem of assigning the cost to periodic revenue in some satisfactory fashion. The cost assignment rules are usually based on some concept of service rendered and expected to be rendered. Before we can apply such a rule we must be able to identify and specify the type of service rendered and to design appropriate measurement scales for its quantification.

The accountants' approach to income is centered around the concept of matching expired costs with revenues recognized. The matching must relate to a specified organization, and it must be related to some meaningful unit for comparison and prediction. Our minds seem to operate best when this unit is in terms of activity units or time units. But to be more accurate we should specify an organization-activity unit, an organization-time unit - and in some cases a combination of the two. Accountants tendto follow the lead of most economists and to measure income or loss from some sort of fixed based of estimated future.

prospects. In other words they try to devise a set of instructions for determining whether capital, in some acceptable sense, is held intact and for measuring deviations from this assumed base. Naturally the quantity of capital that is actually measured may be a far cry from the idealized mental construct of discounted future prospects, and the measured deviations may be poor measures of income or loss as idealized conceptions.

The point that is appropriate here is that accountants adopt rules for recognizing revenues and amortizing costs that will tend to yield an income figure that approximates the economists' concept of incremental prospects. In practical affairs accountants have therefore adopted a benefit (service) criterion for amortizing costs. In its simplest form this convention sets forth evidentiary and measurement rules for recognizing new values (revenues) and requires that the values given up to procure these revenues should be measured in terms of the loss in service potential weighted by an appropriate cost factor. In practice the original cost is usually modified by a fraction the denominator of which is the services given up and the denominator of which is the total expected service potential. This somewhat complicated description is expressed on the operational level as matching costs with revenues on a benefit criterion. This procedure is intuitively appealing for most accountants probably accept without question a rule which matches one-fourth of the cost of an item when it is evident that one-fourth of the benefits have been recognized.[1] This rule is indeed widely accepted even in the non-philosophical sectors of profession, and it certainly does not conflict with the broader view adopted by the economist.

The difficulties surrounding the benefit doctrine arise from the difficulty in specifying and measuring benefits as well as from the need for appraising the future. For buildings we may sometimes identify and specify the benefits as shelter, observe that services are rendered (and benefits received) roughly in proportion to units of time, and estimate the total expected service potential in terms of time units. This procedure looks simple, but possibilities for error arise at each of the three steps. Specifically in regard to direct costing a real difficulty arises at step one - identifying and specifying the service potential. In all cases it becomes necessary to decide what form the benefits take, when they are rendered, and when the value is added.

To set the problem in perspective it should be recalled that full costers tend to assume that the incremental benefits from fixed charges (costs) are received when the products whose production is expedited by the fixed costs are sold and contribute their bit to the stream of recognized revenue (new revenues recognized). Thus the period's building cost, for example, tends to be treated as an asset (without change in carrying value) until the production of the period is sold and to be metered to expense (matched with revenue) as the sales value of the

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[1] This rule has general intuitive appeal even with a liquidating assumption as sometimes found in mining ventures. It is not necessary to assume that capital is held intact.

product is recognized.

Notice that the full-costing position does not depend on some mystical feeling that the costs somehow attach inherently to physical units. This dualism is totally unnecessary, and its use leads to doctrinal disputes not unlike those encountered by theologians of almost all persuasions.[2] Full-costing advocates may feel that effective fixed costs should be retained as assets until the product whose production was expedited by the cost is sold. Such a stand is not required, however, for one may be a full-coster without committing himself to accept the sales event as the crucial event for recognizing new values to the firm. This position does not commit its holder to any particular stand with regard to when the benefits are "actually" received. One is committed, instead, to the position that the incremental value ~~of~~ to a firm (income) is measured best by treating bundles of sacrifice as if they were made when revenues are recognized. Thus, full costers need not hold that costs expire or that service potential is released in some mechanical or mystical manner. Costs expire exactly when accountants say they expire i.e., when the conditions set up in the rules for cost expiration have been met. These conditions are determined by the profession with considerations for the objectives of accounting. The question at issue between direct and full costing advocates is then to find which expiration rules best fit these objectives. To designate some independent criterion for expiration is to beg the question unless this criterion is related to acknowledged objectives. Even appeals to value are not convincing. Direct costing may result in asset values nearer to economic values, but this conclusion is not certain.

Appeal to "release" of service potential may have some merit, but it has been improperly used by some outstanding accountants and some otherwise important committees.[3] Cost, as a mental construct, ordinarily refers to sacrifice. Defined operationally 'cost' includes a set of in-

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[2] The doctrinal disputes over dualism have often been bitter. The related and more general philosophical problems of identity preservation through change is also involved. The doctrine that costs attach is almost completely gratuitous except in the sense that accountants select a member or a limited subset of the total environment and impute-specify that - certain costs attach to that member or subset. Such imputation may be arbitrary (capricious) but in most cases such assignments are made in pursuit of definite purposes and in the hope of obtaining objectives.

[3] Vatter seems to be the originator of the "release of service" approach, "...expense is simply the draining-off or the release of converted services into those channels during some period of time." The Fund Theory of Accounting and Its Implications for Financial Reports (Chicago: University of Chicago Press, 1947), p. 22. Robert Dixon appears to have accepted Vatter's approach. "My personal feeling is that in its ultimate [sic] meaning cost is just that - any release of value." "Cost Concepts; Special Problems and Definitions," The Accounting Review,

structions that yield figures which should be constituently related by definitions, relations or interve~~r~~ning variables to sacrifice. It is certainly true that service potential of some sort is usually acquired by the sacrifice. It is also true that for the *determination of rules for writing off costs* the decline (release?) in service expectation is often used. The processes for measuring declines in service expectations are fairly well developed, and these processes are sometimes used to determine a convention or rule for *measuring* the expiration of cost. Now it is true that we define concepts operationally (relate them to the empirical world) by giving the operations necessary to discriminate and measure them. The term 'cost' usually is associated with many properties in which certain kinds of service potential *may* be included. Do the service possibilities need to be exclusive to the organization? Scarce? May we have costs without any service potential? For decision making a cost definition that emphasizes sacrifice seems to be preferable.

The preceding paragraphs are devoted to suggesting some limitations of the definition of cost expiration as release of service potential. This discussion does not oppose the doctrine that costs should be written off -- assumed to expire -- as service potential declines. The benefit doctrine does in fact imply that cost expiration should be measured in terms of service (value) reduction. Except for extremists both direct and full costers accept this approach. The point of contention is over the selection of appropriate rules for determining service decline or "release."

One objection to income measured by full-costing conventions is that fixed costs are matched with revenues -- at least in part -- as if they are in fact variable with revenues. If idle-capacity losses and excess utilization gains are omitted, the procedure does treat fixed costs as if they are variable with sales. When the traditional provisions are made for treating idle capacity as a direct cost the effect is to meter to profit and loss (match with revenues) an amount which tends to average out as the amount of "period" costs but which varies from period to period not in proportion to output but in response to the difference in production and sales of each period. (As long as sales and production are equal the change is equal to the period cost.)[4]

January, 1948, p. 42. Notice the change from "expense" to "cost." Vatter seems also to be the originator of the term "embodied" in this connection. "Assets are economic in nature; they are embodiments of future want satisfaction in the form of service potentials...." *Op. cit.*, p. 17. How are services "drained off?" When? What are the recognition rules? Which measurement rules are appropriate?

[4] Economists have sometimes referred sneeringly to the accountants' "ability to convert fixed costs into variable costs at will." They forget that the fixed-variable classification, as they use it, is a poorly structured construct that is, at best, a subdivision of the relevant-non-relevant division. If the costs are relevant to a decision or action they are influenced by the alternatives, and they in turn have an impact on the decision. Now traditionally relevancy of cost with regard to

It has not been established just why the "period" costs give the proper amount to be matched with revenues, and in fact the definition and relevance of period costs are not completely established. Nevertheless the disadvantages of the full-costing approach are clear enough. Profits on reported projects can be manipulated by merely changing the production rate and not changing the firm's prospects or values. Budgeting is slightly more difficult and acquires an additional accounting for that part of the variance which is due to out - of - phase production and sales. These limitations of full costing are well known and have been widely discussed. We are more interested here in the shortcomings, if any, of direct costing when applied to income determination.

The literature of direct costing indicates that primary concern has been with incremental costs and that the rationale for period costs has been less well developed. Exactly what services are made available

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production decisions is often called "variable cost," and costs not relevant to the particular output decision are said to be fixed. Clearly a cost may be fixed with regard to output decision A and at the same time variable with respect to decision B. Or a cost may be fixed or variable if the initial condition are changed, e.g., all costs are variable before they are committed.

For an accountant depreciation on buildings is a smoothing of a cost that was relevant (variable) to a big batch of future production. Now if the decision to invest has already been made, how can the accountant argue that its cost is relevant to future periods or to individual production units? The accountants procedure may be criticized but it is not nonsense. He assumes first that the firm is a continuing one and that future replacements will therefore be necessary to generate the income required to stay in business. He assumes further that the past cost of the facilities will bear some relation to future replacement cost. Thus it is assumed that a future decision similar to the past one will need to be made. Thus he sees a series of irregular capital budgeting decisions. But, more important, he sees the need for a whole new series of decisions that may be improved if income is reported for shorter intervals than the normal replacement cycle. He feels that some provision for capital consumption should be made for income determination. Revenue is usually recognized on a unit basis, and the accountant feels that taking capital consumption on a unit basis will provide useful income figures. In other words he assumes that this cost is relevant for income determination, and he prefers a matching of costs (on a benefit basis) with revenue for his income measurement rule. He does not argue that this cost is relevant to (and therefore variable with) the shortrun production decision.

It should be observed that assignment of capital consumption to periods, makes this cost variable with respect to time periods. Clearly this cost is relevant to the decision for which periodic income reports are useful and not to what should be done with time. To argue against both allocations is to argue against the income concept itself. Many do so and now feel that this concept has been somewhat over-rated.

to the firm by period costs? Some direct costers may wish to abandon the benefit approach entirely and to defend their position by trying to establish some sort of cost "attachment" or "embodiment" to or in the period. Yet the concept of costs being embodied in a time period makes about as much sense as its cousin which tries to attach costs to tangible service potentials. The mind may soar on wings of analogy, but the explanatory results are meager. We may treat costs as if they attach in some manner to the periods, but even this analogy must be pursued with caution. We need to define or at least explicate the term "attach." Clearly costs are not barnacles nor are they glued or clipped in some fashion to products, or periods, or structures or property rights or to anything else. When one argues that costs attach to periods, one probably mean that a decision has been made to "expire (writeoff) the costs" in proportion to time or at least without regard to production or sales. Thus, "costs attach to periods" is not some sort of compelling anthropomorphic argument. Instead the term is a poor attempt to explain by a picturesque analogy that a decision has been made to measure cost expiration in a specific manner. A fundamental problem for direct costers is whether or not they are willing to stand on (defend) the implied assumption that the services rendered by period costs e.g., those costs that are invariant to shortrun changes in output, are received in the periods in which the expenditures are made or in some fashion that is always independent of periodic variations in output.[5]

Sophisticated advocates of direct costing for income determination ordinarily do not wish to abandon the benefit (service) approach to expiring (expensing) costs. Instead they cling to the service approach by calling for a new look at the form of services received and to be received. What is the nature of the benefits from fixed costs? Why is the cost of a building capitalized and spread to periods whose length does not influence the amount of the cost? Is the period depreciation incremental or relevant in any manner to specific periods? Does the fact that some wage contracts are related to periods mean that the cost is incremental to the period?

Early direct costers were probably not greatly concerned with period costs and probably looked on them as residuals after the more important task of defining product cost for incremental purposes had been settled to their satisfaction. Thus period costs become associated with (attached to) periods due primarily to their being residuals not relevant to shortrun decisions. Accountants have long been addicted to a type of conservatism into which pattern the period-cost concept could clearly be fitted. But perhaps more important, there has been an existing tradition for treating only merchandise cost of sales as a product cost, considering gross profit as contribution, and treating most or all other cost expirations as independent of sales or

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[5] It would seem that some direct costers might acquiesce in charging depreciation as a function of sales (units sold). Clearly they must oppose depreciation on an activity (production) basis unless the depreciation could be avoided by not producing.

product sold. Moreover, this tradition of period costs was ingrained in the handling of purchasing, receiving, and stock-room costs. Some concerns treated freight-in and make-ready costs in a similar manner. Therefore, it can be seen that the extension of period costs to manufacturing was no serious break with tradition. Apparently little attempt was made to provide independent support for the period-cost notion.

Suppose we look first at the decline in value criteria and examine the the form of the services rendered by period costs. First, assume no production or sales in the period. What then is the form of the benefits from the fixed costs of depreciation, taxes, salaries of key personnel, etc.? In this case it seems that the services of the outlays are in the form of keeping the facilities and organization together so that the firm will be in a position to take advantage of the favorable future prospects. These costs tend to increase the value of the firm and certainly are not losses in any sense. A valuation approach would not only defer the amount of the costs and match them when the ship of better prospects does come in but would probably report an increase in value due to the increasing closeness of these favorable prospects. The only legitimate argument for cost expiration in this case is to insist that there is a loss of expectations measured from some more ideal situation that in fact never was an alternative, e.g., to begin anew at the end of the sterile period.

It is interesting to note in the above case that the period cost approach is not appropriate and the usual full costing assumptions with idle capacity provisions is also highly objectionable. In this case there is little to choose between direct and so-called full costing. With 100% idleness the two systems would report approximately the same loss. A variation of full costing that uses no idle-time variance and takes all costs to product (a la Earl Saliers) is no better. If only one unit is made all the fixed costs are added to it and expensed when the unit is sold, and if no units are made the effect would be that of period costing. Clearly this approach is not desirable. Although one might defer all fixed costs if no units were made, the difference between zero and one unit becomes highly critical.

Suppose to vary the case that production goes on more or less at an even rate year to year, while for some reason sales are made only every other year on the even years. How do direct costing and full costing methods report income in this case? Full costing could, of course, defer the fixed costs of the odd years and match them with the revenues of the even years. Clearly the firm does not decrease in value in any sense in the odd years. (In fact, its value would tend to increase.) Nevertheless, the full-costing approach yields periodic profit figures that are manifestly absurb even to those steeped in accounting doctrine. The reflection of no gain or loss on odd years and sizeable profits on even years cannot be counted a desirable reflection of changes in the future prospects of the firm - and therefore a desirable measure of income. But how does direct costing fare in this case? The pattern of income reported by direct-costing devices is even more atrocious. The period costs of the odd years would be matched with zero revenues of these years and the reported loss would be the amount of the

period costs. The profits reported on even years would, of course, be greater than those reported by full costing by the amount of the period costs of the odd year preceding. Neither scheme works well in this case, but the direct cost approach introduces a greater whiplash that is clearly not related to the welfare of the firm and its prospects. It is only in the most extraordinary situation or with the strongest assumptions that such a reporting pattern would approximate the pattern resulting from applying valuation procedures. It is highly unlikely that such a pattern would in some miraculous fashion lead to more desirable decisions by anyone connected with the firm or with the economy.

Suppose for another illustration that a concern buys machines and other necessary facilities and manufactures a five-year supply of product the first year. Fixed costs are high during the initial period and negligible for the remaining periods. It is assumed that all the fixed assets are exhausted in this period. The product is stored at negligible cost and is sold evenly over the five-year span. Direct costing apparently would show a tremendous loss for period one and perhaps sizable gains for the remaining four. Clearly the initial loss is not related in any sense to the decline-in-prospects (value) criterion, and the result is in fact capricious.

Full costing is clearly superior in this case and squares pretty well with the assumption that gains or losses should bear some identifiable relationship to discounted prospects - value. Presumably the firm (assuming no continuity and withdrawals of revenues) declines in value about one-fifth each year, and any measuring system that pretends to be related to prospects (value) should not deviate too far from this norm. The argument is not changed significantly when capital is maintained. Full costing tends to accomplish this objective subject to some traditional peculiarities in revenue recognition. Note however that thoroughgoing full costing when combined with the usual accounting conventions tends to make the reported profit proportionate to revenue.[6] The value may, in effect, be added before the point of sale when the goods are produced or even when the decision to manufacture was made. Yet unless we wish to recognize dismal prospects early (before sale) the direct costing pattern of income reporting should prove to be undesirable. Even if by chance it is obvious at an early date that a mistake was made, it does not follow that direct-costing techniques will yield the desired measure of pessimism. More direct means of estimating the extent of the misfortune would seem to be more appropriate.

The case in which direct costing looks best is one in which the fixed costs are evenly distributed over the periods, and production and

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[6] This statement must be modified when costs are applied to units and sales prices change. An enthusiastic full-coster might take the position that the units lose their ability to measure cost expiration in this case. That is, the discounted prospects (value) of activity is no longer measured properly by a scale based on units of product. This is, in fact, the contention of those who wish to change inventory valuations for damaged or obsolete goods or for changes in market value.

sales are fairly constant. This is also the situation in which full costing looks best. In a situation where the firm manufactures to stock in some periods and reduces stock in others direct costing will tend to give less profits when inventories are being built up and more profits when inventories are being reduced. The overall conclusion is that with other things equal direct costing will report smaller profits on the upswing of a cycle when inventories are increasing and less losses on the downswing when physical inventories are decreasing. This effect needs emphasis, for it is contrary to what one would normally expect. One usually expects wider fluctuations when more costs are treated as fixed (e.g., depreciation on a time basis rather than on an activity basis). Full costing, although it appears to match fixed costs with revenues as if the costs were variable, gives consideration to the effects of the idle capacity loss or excess capacity gain. This effect in combination with usual inventory management gives wider fluctuations over the cycle.

An interesting sidelight arises from consideration of periodic under or over-applied standard overhead in the financial statements. These items in a smoothly operating standard cost system are entirely fixed costs that have not been taken to inventories (production) due to the period rules for recognizing some costs (e.g., depreciation on a time basis) and due to the proportional basis used to move these costs to product. It seems that a consistent direct coster would insist that these capacity-variance balances always be taken to operations. The traditional accountant need feel no such compulsion. To the latter the preliminary assignment to periods (or classification by) does not mean that the benefits have been received and that the assigned cost must be treated as expired.

The decision of superiority for direct or for full costing, at least with regard to income reporting, relates to specified objectives and to some sort of ideal or "central meaning" for income that tends to further these objectives. To the extent that such an ideal is related to value changes, we may judge the merits of the two on this basis. Accounting substitutes revenue recognition rules and cost expiration rules for value changes so that any judgment must first consider the related accounting rules. Inasmuch as the usual measuring convention for cost expiration relates to benefits (services) expired we must judge the programs in this framework. Which program then corresponds "best" to the immediate goal of matching the cost according to benefit and therefore with the more distant goal of showing value change and thus broadcasting changes in expected prospects? First, what is the nature of the benefits from fixed costs? Second, how can they be identified?

Fixed costs are sometimes known as establishment costs, and are therefore looked on as costs necessary to keep the concern in readiness to produce. Does it follow that these "readiness" costs yield their services tranquilly and evenly over time or are the services received by spurts and jerks over the trade cycles as opportunities for profit present themselves or as the products are sold or as the cash and receivable values are increased? If no product is made or sold during a year and such a state of inactiviy has been expected, it has been sug-

gested earlier that value is added by these costs, and the benefits are clearly identifiable in the form of putting the firm in a position to take advantage of future prospects. It does not follow therefore that the so-called establishment costs are necessarily period costs.

Many accountants including the present writer, are on record as favoring depreciation of buildings and certain kinds of standby equipment only when the expected benefits are received or lost.[7] Thus a warehouse designed and constructed to be used for occasional bumper crops would be depreciated only in the periods when the benefits from the bumper crops are received. To argue that these warehouses depreciate proportionately with the passage of time is to hold that the service rendered periodically are related to some sort of *maximum* benefit expectations that were never contemplated by management and probably were in fact never available to management.

Defenders of the direct-cost approach apparently hold that establishment costs are period costs, and this identification seems in turn to imply that the services are rendered (benefits received) proportionately to the measurement scale for time. (Modification for compound interest is a possibility.) Thus one would expect direct-costers to side with accountants who insist that depreciation is always measured best as a function of time.[8] Moreover, they would probably not be satisfied with a depreciation scheme based on units of sales unless there is marginal plant cost associated with added sales.

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[7] Occasional further modifications may need to be made for outright mistakes and incorrect estimates. See for example: "Depreciation and Income Measurement," *The Accounting Review*, January, 1944, pp. 39-47 and *Handbook of Modern Accounting Theory*, ed. Morton Backer (New York: Prentice Hall, Inc., 1955), pp. 343 ff.

[8] An interesting and similar problem of service identification arises in connection with fire insurance contracts. The usual approach tends to assume a "peace-of-mind" concept of service rendered and assume that this freedom from worry is proportional to time. One wonders whether accountants would hold to straightline-time allocations if the insurance policies were written to cover a specified number of fires. Many would no doubt adopt a concept of service rendered that is identified with specific fires. Similar problems of benefit identification and measurement are found throughout the amortization field. Original organization costs help create the environment and opportunity for profitable operation. Are these opportunities proportional to time or should changes in the trade cycle be introduced to suggest that profit opportunities are *not* proportional to time?

We may extend the discussion to cover bond interest and the writeoff of bond discount or premium. The opportunities for employment of funds in a profitable manner may bear no relation to the valuations that are procured through straightline or compound-interest references to time periods. In fact, it may be argued that money is not borrowed "for time" but instead is borrowed to take advantage of opportunities

The case for direct costing as an aid to income measurement seems to rest on an assumption of smoothing. The benefits received from the fixed establishment costs are assumed to be proportional to time. Thinking might be sharpened if direct costers regarded such costs as payments for keeping the organization intact. It would then be obvious that another decision is necessary. How are the benefits from having a functioning organization measured and received? In most cases, perhaps, the conclusion may be that such benefits are in fact received in proportion to time. But they may not be distributed proportionately to time. The use of "period costs" glosses over the implied conclusion. Moreover, the term itself is objectionable, for accountants are so accustomed to identifying the name of the cost with the form or source of the service that many may feel that the fixed costs are for the privilege of using time in some sense. It seems to be better classification to treat them as going-concern, or establishment costs and then as a separate decision decide whether the services rendered are, or are not, or are in part proportional to time.

In conclusion the similarity of direct costing and replacement depreciation should not be carried too far. Both seem to charge the current costs of keeping the environment suitable for profitable activity as current expenses. Adaption of replacement depreciation however does not preclude clustering depreciation about units of production and possibly deferring some of the cost to future periods' revenues.

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that would otherwise not be available and that the money cost should be so allocated. It happens that the terms of most contracts are related to time, but what about income bonds with long terms? Shall we spread the money cost proportionately to time in this case? A negative answer is indicated. We have also not faced the issue squarely in the field of dividends. Regular dividend payments do not necessarily imply equal benefits from capital funds.

SOME ASPECTS OF SCIENTIFIC METHOD I

> *The unity of all science consists alone in its method, not in its material.* The man who classifies facts of any kind whatever, who sees their mutual relation and describes their sequences, is applying the scientific method and is a man of science.[1]

The objective now is to discuss the time-honored topics of scope and method. This treatment is unorthodox in that it deals entirely with problems of scientific method and the language of science with the hope that accountants will understand the intellectual tools that are available for the study of accounting. Currently members of all civilizations have tremendous faith in the powers of science. Those who conduct scientific inquiry have status, and a yearning to be scientific is a characteristic of the twentieth-century intellectual. According to Russell there *is* considerably stronger belief in the ability of science to move mountains [or to help underdeveloped nations] than there is confidence that faith will do the job.[2] It is the purpose here to discuss at an elementary level the empirical and logical requirements for a science and to examine briefly the place of causation, explanation, and hypothesis in the methods of science.

It is convenient to think of science as composed of a body of empirical data and devices for apprehending these data so that they become a part of experience. "Science is a method of approach to the entire empirical world, i.e., to the world which is susceptible of experience by man. It is furthermore an approach which does not aim at persuasion, at the finding of 'ultimate truth,' or at conversion. It is...a mode of analysis..."[3]

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[1] Karl Pearson, *The Grammar of Science* (Everyman ed.; London: J. M. Dent & Sons, Limited, 1937), p. 16. (Italics in original.) Notice also. "...science claims for its heritage the whole domain to which the word knowledge can be legitimately applied; ...it refuses to admit any co-heirs to its possessions, and asserts that its own slow and laborious processes of research are the sole profitable modes of cultivation..." *Ibid.*, p. 312. (Published first in 1892).

[2] Bertrand Russell, *The Impact of Science on Society* (New York: Simon & Schuster, 1953), p. 15.

[3] William J. Goode and Paul K. Hatt, *Methods in Social Research* (New York: McGraw-Hill Book Company, Inc., 1952), p. 7. "Science itself rests upon a series of postulates, or assumptions, which are themselves fundamentally unproved and unprovable....Here are some of these 'nonscientific bases of science." *The world exists....We can know the World....We know the world through our senses....Phenomena are related causally...*" *Ibid.*, p. 20. Contrast the following statement by Pearson. "Of what

Thus, the scientific approach is likely to be disappointing to those who are philosophically inclined and like to have their philosophical systems comprehensive and impressive. A few scientists like Eddington and Jeans have speculated about such metaphysical systems, but their efforts have not been taken seriously by practising scientists. The summary goal of science is extremely simple: to study experiences and to search them for relationships and correlations and thus be able to form a basis for predicting the future state of the system. Perhaps the clearest and most unequivocal position is stated by Pearson.

> Science in no case can demonstrate any inherent necessity in a sequence, nor prove with absolute certainty that it must be repeated. Science for the past is a description, for the future a belief; it is not, and has never been, an explanation, if by this word is meant that science shows the *necessity* of any sequence of perceptions.[4]

This lack of concern with first causes and grandiose explanations along with the decision to remove such speculation from the realm of science fails to satisfy those who long for absolutes until it is clearly understood that an individual remains free to speculate to his heart's content and can fashion his explanations to set his own mind at rest. The point to be emphasized is that such explanations are not a necessary part of science or scientific method. The individual may be psychologically satisfied by the knowledge that negative and positive charges tend to attract, or he may feel horribly cheated and search for a more convincing explanation. He may conclude for example that a gremlin is at work to bring about the attraction, and he may stop inquiry at this stage, or he may wish to find a further "explanation" to explain the behavior of the gremlins. He may be satisfied that God's will is at work and rest his inquiry there, or he may look for for an explanation in the field of psychology, anthropology or even astrology.

Cohen argues that "...explanation is but a developed description"[5] when used in a scientific sense. The classic statement about the nature of explanation is perhaps that of Bridgman. "...the essence of an explanation consists in reducing a situation to elements with which we are so

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is beyond them [perceptions], or 'things-in-themselves,' as the metaphysician term them, we can know but one characteristic, and this we can only describe as a capacity for producing sense-impressions...This is the sole scientific statement which can be made with regard to which lies beyond sense-impressions." *Op. cit.*, p. 61.

[4] Karl Pearson, *op. cit.*, p. 99. Notice also: "It would undoubtedly be of great intellectual interest to know *why* bodies fall to the earth, but *how* they invariably fall is the practical knowledge, which now enables us to build machines and which enabled our forefathers to throw stones, and thus helped them as it help us in the struggle for existence." *Ibid.*, p. 119.

[5] Morris R. Cohen, *Reason and Nature* (Glencoe: The Free Press

familiar that we accept them as a matter of course, so that our curiosity rests."[6]

It is probably not enough to say that an explanation or a proof, is carried on until the investigator is satisfied and that his curiosity rests. We may want to ask what forces tend to lead to satisfaction? Are such forces from the scientific field or from the cultural environment? Apparently the "modes of behavior" accepted by scientists admit only those explanations that meet the tests of scientific methodology, but the individual scientist may stop exploring the gigantic web -- the appalling regress of explanations of explanations at any point. The usual process is one of reduction in which explanations are carried back and checked with the scientist's delight - the facts. Many scientific constructs cannot be subjected directly to such tests, but most scientists feel that they must be defined so that they can be reduced finally to sensory experiences. Bridgman discusses the problem in some detail.

> ...we must be prepared to accept as an ultimate for our explanations the mere statement of a correlation between phenomena or situations with which we are sufficiently familiar.
>
> ...the explanatory sequence may be terminated in several possible ways....we may never push our experiments beyond a stage into which the elements with which we are already familiar do not enter....Or, secondly, our experiments may bring us into contact with situations novel to us~~e~~, in which we can recognize no familiar elements....Such a situation constitutes an explanatory crisis and explanation has to stop by definition. Or thirdly, we may try to force our explanations into a predetermined mold, by formally erecting or inventing beyond the range of present experiment ultimate more or less like elements already familiar to us, and, seek to explain all present experience in terms of these chosen ultimates.[7]

Structural Elements of Science

It is sometimes held that science is based on a "theory of observables" but it should be emphasized that there is more to science than contemplating facts and sensing empirical evidence. Scientists accept a

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Publishers, 1953), p. 14. He continues: "Actually, the search for physical causes or explanations is, thus, a hunt for appropriate major premises..." Ibid., p. 226.

[6] P. W. Bridgman, The Logic of Modern Physics (New York: The Macmillan Company, 1960), p. 37. Note also: "...we see that an explanation is not an absolute sort of thing, but what is satisfactory for one man will not be for another." (p. 38).

[7] Ibid., pp. 47, 39-40.

pool of observable data or a collection of sense impressions as a part of their structure but it is by no means all of the structure.[8] There is also a theoretical side of the structure that is composed of the constructs and their constitutive relations with one another. It is convenient to think of the connections between the observable data and some of the theoretical constructs as "rules of correspondence" or as operational definitions, or as constructs with direct empirical content. In the theoretical space (realm) it is convenient to think of a series of theoretical constructs some of which are related to empirical data through rules of correspondence and others of which are related only to other constructs by means of constitutive definitions, interpretative connections, and intervening variables. Torgerson explains:

> ...in physics we may pass from one set of observable data through operational definitions into the theoretical space, travel across the theoretical space from one construct to another via constitutive connections, return to the plane of observation via other operational definitions, and finally predict the results of a different set of observations. The theory can then be *accepted* or *rejected*, depending upon the agreement between the predicted and observed data.[9]

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[8] There is some disagreement among scientists about the treatment of these sense impressions. Some, including most of the logical empiricists, seem to prefer the use of the semi-neutral term "facts" in order to minimize the psychological overtones of the term "sense impressions." Facts are abstractions and interpretations and are by no means neutral with regard to psychological interpretations. Fortunately, all a scientist need accept is that sense impressions exist. Bertrand Russell comments: "...if physics is an empirical science, whose statements can be confirmed or confuted by observation, then physics must be supplemented by laws connecting stimulus and sensation. Now such laws belong to psychology. Therefore what is empirically verifiable is not pure physics in isolation, but physics plus a department of psychology. Psychology, accordingly, is an essential ingredient in every part of empirical science....Our perceptive apparatus....can to some extend be ignored by the physicist, because it can be treated as approximately constant." *Human Knowledge, Its Scope and Limits* (New York: Simon & Schuster, 1948), pp. 49, 208. New aids to perception such as improved microscopes would seem to upset his constancy hypothesis.

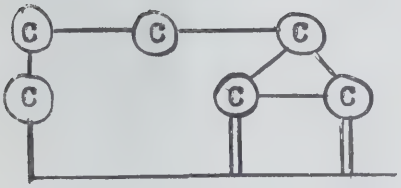
[9] Warren S. Torgerson, *Theory and Methods of Scaling* (New York: John Wiley & Sons, Inc., 1958), p. 7. The present discussion leans heavily on Torgerson and Carl G. Hempel, *Fundamentals of Concept Formation in Empirical Science* (Chicago: University of Chicago Press, 1952). Hempel in more poetic. "A scientific theory might therefore be likened to a complex spatial network: Its terms are represented by the knots, while the threads connecting the latter correspond, in part, to the definitions and, in part, to the fundamental and derivative hypotheses included in the theory. The whole system floats, as it were, above the plane of observation and is anchored to it by rules of interpretations. ...These might be viewed as strings which are not part of the network but

It should be clear that some sciences are better developed than others in the sense that all or nearly all of the constructs are either directly grounded in observational data or are indirectly so grounded through other constructs. Thus Torgerson continues:

> Constructs, to be useful in a science, must possess both systematic and empirical import. By systematic import is meant simply that the construct must be such as to lend itself to the formation of multiple connections with other constructs in the structure. By empirical import is meant that the construct must be connected, either directly or through other constructs, to the observable data. One of the important concerns in science is the search for or the invention of constructs with both empirical and systematic import.[10]

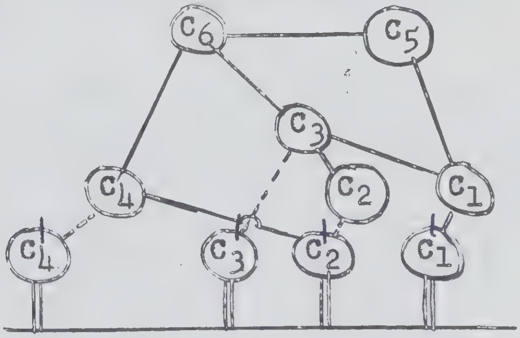
The following illustration helps explain the relations in a fully developed and a poorly developed science.

Well Developed Science.



Empirical Data

Poorly Developed Science.



Empirical Data

LEGEND AND EXPLANATION

Double lines = rules of correspondence between constructs and empirical data.
= operational definitions so that the first row constructs have operational content and are empirically meaningful.

Single lines = constitutive definitions and relations among constructs that are logical, mathematical or classificatory.

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link certain points of the latter with specific places in the plane of observation. By virtue of those interpretive connections, the network can function as a scientific theory: From certain observational data, we may ascend, via an interpretive string, to some point in the theoretical network, thence proceed, via definitions and hypotheses, to other points, from which another interpretive string permits a descent to the plane of observation." (p. 36).

[10] Warren S. Torgerson, op. cit., p. 10. Henri Poincare empha-

Dotted lines = relationships among constructs that are not well established and are tentative. ("Intelligence can thus remain the ability to learn, even though most experiments show that intelligence, as operationally defined is virtually unrelated to learning ability as independently defined..." Torgerson op. cit., pp. 7-8)[11]

Example: Suppose that C_1^1 represents assets operationally defined and C_1 represents assets as defined in terms of "value": C_2^1 represents the construct of liabilities operationally defined with rules for identifying and measuring them and C_2 represents some construct defined constitutively in terms of negative assets or adverse interests: C_3^1 represents the construct net worth as defined empirically in terms of market values of shares and C_3 represents net worth as defined in terms of the familiar equation involving assets and liabilities. It should be obvious that the constitutive definition of net worth is far removed from the usual definition made constitutively in terms of well being.

We are now in a position to examine the place of logic in the scientific structure. It is clear that observation of isolated facts is not enough to constitute what is considered to be scientific activity. The brief discussion of logic is followed by a brief discussion of the empirical aspects of science including the observation rules and the nature of objectivity. In turn this discussion is followed by a brief treatment of the place of hypothesis and theory in scientific work. The essay is concluded with a broader overview of the possible approaches to science and what makes science a going concern in the western and recently the eastern world.

Logic in the Structure of Science

In our present society a knowledge of mathematics confers status, and logic, as a semi-mathematical activity, enjoys prestige in the intel-

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sizes a similar view. "Physicists...are not guided in their selection of facts solely by utility....The facts that interest them are those that may lead to the discovery of a law....The isolated fact attracts the attention of all, of the layman as well as the scientist. But what the true scientist alone can see is the link that unites several facts ....the true discoverer will not be workman who has patiently built up some of these combinations of facts , but the man who has brought out their relation." Science and Method (New York: Dover Publications, Inc., n.d.), pp. 27, 28.

[11] This chart and discussion are adapted from Warren S. Torgerson, op. cit., p. 3. Torgerson, in turn, expanded the illustration by Henry Morgenau The Nature of Physical Reality, a Philosophy of Modern Physics (New York: McGraw-Hill Book Company, Inc., 1950), p. 85.

lectual community. The inclusion of logic in such company comes primarily from its expansion from the relatively sterile classical logic. The expansion has been so dramatic that Russell and others have argued that mathematics itself is a branch of logic.[12] Clearly logic is a necessary ingredient for scientific thinking and it seems desirable to review briefly what logic can and cannot do.

Logic, in the popular current view has no relation to empirical data until its terms are interpreted. Logic is thus defined in terms of syntax (language structure) and deals entirely with the rules that are acceptable for transforming one or more sentences into other sentences. A. P. Ushenko states the situation:

> ...the whole field of logic and mathematics consists of tautologies derived from other tautologies by means of tautologies.[13]

In scientific method the logical apparatus including its rules for formation and transformation belong to the classification, definition, explication section that has been labeled as the area of constitutive definitions -- the systematic area. It is possible, for example, to agree on a list of symbols, a further list of rules about the formation of such symbols, and further rules about the transformation of such symbols (inference) and to proceed to prove all kinds of theorems in this logical space. These symbols take on empirical content and

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[12] The standard treatise remains A. N. Whitehead and Bertrand Russell, Principia Mathematica (Cambridge: University Press, 1910-1913). A more understandable summary is available in Bertrand Russell, Introduction to Mathematical Philosophy (London: Allen & Unwin, 1919). Some mathematicians have resented being treated as specialists in a branch of logic and have pointed out that the constructs of infinite classes and what is quaintly called mathematical induction make the domain of mathematics much broader than that of logic. As a result they argue logic may well be considered to be a subdivision of mathematics. For an understandable discussion see Raymond L. Wilder, Introduction to the Foundations of Mathematics (New York: John Wiley & Sons, Inc., 1952).

[13] A. P. Ushenko, The Theory of Logic (New York: Harper & Brothers Publishers, 1936), p. 131. Rudolf Carnap states: "Such a system [symbolic logic] is not a theory (i.e. a system of assertions about objects), but a language (i.e. a system of signs and of rules for their use)....Strictly speaking, what we construct is not a language but a schema or skeleton of a language: out of this schema we can produce at need a proper language (conceived as an instrument of communication) by interpretation of certain signs." Introduction to Symbolic Logic and Its Applications (New York: Dover Publications, Inc., 1958), p. 1. Perhaps the best known explanation is by C. I. Lewis: "A mathematical system is any set of strings of recognizable marks in which some of the strings are taken initially and the remainder derived from these by operations performed according to rules which are independent of any meaning assigned to the marks." Survey of Symbolic Logic (Berkeley: University of California Press, 1918), p. 355.

relate to sensory experiences through "interpretation" of the symbols. Interpretation is accomplished by the rules of correspondence, i.e., the operational definitions that give us instructions about identifying and perhaps measuring experiences that fit the definitions used in the constructs -- the symbols.

Thus if a statement is logically true, it is true by stipulation in the sense that it can be derived according to the accepted rules of derivation (manipulation) from the sentences or propositions that have been accepted. It has been charged then that logic cannot possibly lead to any new knowledge or new truth for all conclusions have already been included in the premises. The practical function of logic then is to set forth some highly mechanical rules for rearranging the sentences and thereby simplify some of the work of reasoning. Tarski explains:

> It should be observed what an extremely elementary form -- from the psychological point of view -- all mathematical reasonings assume due to the knowledge and application of the laws of logic and the rules of inference; complicated mental processes are entirely reducible to such simple activities as the attentive observation of statements previously accepted as true, the perception of structural, purely external, connections among these statements, and the execution of mechanical transformations as prescribed by the rules of inference.[14]

The economy that results from applying mechanical means is a clearcut saving of importance to the intellectual life of a society. Whitehead, for example, states:

> It is a profoundly erroneous truism...that we should cultivate the habit of thinking of what we are doing....Civilization advances by extending the number of important operations which we can perform without thinking about them. Operations of thought ...are strictly limited in number...and must only be made at decisive moments.[15]

It should be equally clear that mechanical means of making inferences may lead to less errors. Such formal rules do not confuse the legitimate moves of logic with the emotional connotations of the interpretations, and theorems proved by the logical calculus need not be reproved for each interpretation that may be made.

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[14] Alfred Tarski, Introduction to Logic (New York: Oxford University Press, 1941), p. 49. Wilder stresses the same aspect of mathematics. "When we apply algebra to the solution of some concrete problem...the steps involved in solving the particular problem have all been provided for; little further thought need be expended...." Op. cit., p. 196.

[15] A. N. Whitehead, An Introduction to Mathematics (New York: Oxford University Press, 1948), pp. 41-42.

While it must be admitted that logic is of tremendous benefit in avoiding inferential error, perhaps the greatest benefit of logic is in the realm of psychology. Carnap points out:

> Though logic cannot lead us to anything new in the logical sense, it may lead to something new in the psychological sense. Because of limitations on man's psychological abilities, the discovery of a sentence that is L-true [logically true] or of a relation of L-implication is often an important cognition....the psychological content (the totality of associations) of one of these [new] sentences may be entirely different from that of the other.[16]

However, not all scientists are so enthusiastic about the benefits of formal logic, and those that are known loosely as intuitionists often seem to feel that the slavish following of formal logic can slow down the creative process. While formal mathematics cannot keep from being "exact" it does not solve the synthetic problems but instead pushes them back on the person who is making the interpretations and trying to fit the framework to empirical data. Poincare, for example, states:

> Logistic, according to him [Couturat] lends "stilts and wings" to discovery....On the contrary, I find nothing in logistic for the discoverer but shackles. Logistic forces us to say all that we commonly assume, it forces us to advance step by step; it is perhaps surer, but it is not more expeditious.[17]

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[16] Rudolf Carnap, Introduction to Symbolic Logic and Its Applications, op. cit., pp. 21, 22. Elsewhere Carnap in the spirit of a good empiricist writes: "The chief function of a logical calculus in its application to science is not to furnish logical theorems...but to guide the deduction of factual conclusions from factual premisses." Foundations of Logic and Mathematics (Chicago: University of Chicago Press, 1939), p. 35. Bertrand Russell states: "By means of substitutions we really obtain sets of special cases of our original proposition, but from a practical point of view we obtain what are virtually new propositions." Introduction to Mathematical Philosophy, op. cit., p. 151. William Stanley Jevons much earlier held a similar view. "The mind never creates entirely new knowledge independent of experience, and all that the reasoning powers can do is to arrive at the full meaning of the facts which are in our possession." Elementary Lessons in Logic (London: Macmillan and Co., 1891), pp. 228-229. Morris Cohen holds: "...it is not a matter of definition but a fundamental fact of human experience that we are not actually aware of all the consequences or implications of our statements or assumptions..." Op. cit., p. 194.

[17] Henri Poincare, Science and Method (New York: Dover Publications Inc., n.d.), pp. 177, 178. He continues: "Must we follow your logical rules blindly? Certainly, for otherwise it would be intuition alone that would enable us to distinguish between them." Ibid., p. 178. Notice also the impatience with the syntactical part of scientific method. "The eternal contemplation of its own navel is not the sole

Some difficulty arises in regard to the origin of the rules of formation and the rules of inference. How for example do we arrive at such rules that the expression "p implies q" shall be considered to be true in all cases except where p is true and q is false? How do we decide that the expression $p \vee q$ shall mean p or q or both instead of p or q in the exclusive sense? Here we have a type of analytic truth that is truth by stipulation or convention. If the rules are followed, the results are stipulated to be true even though they may be considered to be tautological and tell us nothing but that the rules have been followed. One approach is that such rules are given from some outside or upper source, but to hold such a view is to cease to be a scientist and acknowledge only empirical data and rearrangements of such data according to the logical rules. One may hold that the selection is arbitrary, and one may select any rules that strike his fancy and operate them in any fashion that is not inconsistent with the rules themselves. (It would be possible to include certain aspects of inconsistency among the rules.) The rules are conventional in the sense that they *could* be widely different from those that are used, and a good many philosphers discontinue the discussion at this point. Social scientists, normally are not satisfied at this point and wish to speculate on whether or not there is a rule for forming new rules or for discarding old ones. If moreover one has a teleological bent or is an advocate of the sociology of knowledge, he is likely to argue such a rule for selection or rejection of other rules is itself subject to the goal-seeking activities of the society in which the procedures are found. Thus, if one holds that only those procedures and processes useful to the organism survive, he may look for empirical evidence that the surviving rules have met this test and that discarded rules have failed to meet it. Such conventions as those asserting that each set is a subset of itself or the empty set is a subclass of all classes are clearly constructed and have continued in use because they tend accomplish desirable objectives and to make work easier.

Such empiricists as Mill, Peirce and Dewey (and perhaps intuitionist like Brouwer) were aware that they were bringing the syntactical structure within the scope of empirical interpretation, but they felt that the determination of rules that determine what is known as analytic truth are essentially synthetic or empirical in content.

> Thus Dewey interprets even logical rules as empirical generalizations embodying methods of inquiry which have proved particularly successful for the purpose of inference and which have therefore been transformed by the users into principles accepted for the time being as stipulations for the carrying on of future inquiry.[18]

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object of this science (logic). It touches nature, and one day or other it will come into contact with it. Then it will be necessary to shake off purely verbal definitions and no longer content ourselves with words." *Ibid.*, p. 183.

[18] Charles W. Morris, "Scientific Empiricism," *International Encyclopedia of Unified Science* (Chicago: University of Chicago Press, 1955), p. 67. Charles S. Peirce (1877) states: "That which determines

Fortunately accountants need not decide whether the rules of logic are empirically derived rules that have survived by meeting the needs of goal-seeking individuals. If it is argued that the rules of logic are beyond experience, they are treated as "analytic truths" and as metaphysical entities. In this case one must agree with my former colleague, George Sorter, that the modern separation of logic and empirical data (a la a Carnap) is a tidy rearrangement that places most of our metaphysical assumptions in the box labeled 'logic' and tries to keep them there. Thus we arrive at such monstrosities as the "metaphysics of logical empiricism" and Sidney Hook's "metaphysics of pragmatism." "Metaphysics" in these cases is essentially another name for "conventions" or "assumptions."

The Place of Hypothesis in Science

We now turn to the question of how research is conducted in the scientific or any other intellectual field. There is an important group of social scientists, including some institutional economists, who feel that the truth in the form of useful relationships will somehow be revealed to those who gather and contemplate the facts.[19] This faith in revelation is somehow incongruous with the scientific approach, and it is obvious that some rules for selection of facts must be devised. Certainly the facts, being the totality of recognized sense experiences, are far too numerous to be handled by complete enumeration. What kind of devices

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us, from given premises, to draw one inference rather than another is some habit of mind, whether it be constitutional or acquired....The particular habit of mind which governs this or that inference may be formulated in a proposition whose truth depends on the validity of the inferences which the habit determines..." Reprinted in Milton R. Konvitz and Gail Kennedy, The American Pragmatists (New York: Meridian Books, Inc., 1960), p. 85. L. E. J. Brouwer states: "The so-called logical principles, therefore, arose as expressions of the structural interrelationships of sentences in the language, and later were found to work when applied to the universe...the practical impossibility of finding examples to disagree with the laws, replaced the 'logical impossiblity' of the earlier laws of language. The reliability of logical principles, in practice, rests upon the fact that a large part of the universe of experience exhibits far more order and harmony...in its finite organization than mankind itself." Quoted from Max Black, The Nature of Mathematics (Paterson, N.J.: Littlefield, Adams & Co., 1959), pp. 193-194.

[19] Joseph J. Schwab, for example, discusses this group in some detail and in fact treats his "anti-principled" approach as one of the "principles" by which scientific inquiry can be furthered. "What Do Scientists Do?" Behavioral Science, V (January, 1960), pp. 9-11. This attitude is apparently an extension of a more general approach to the past known as "historicism,"...history cannot be cast into a rational system.... the special quality of history does not consist in the statements of

are possible? What determines which facts are studied and which are neglected? Who in a society shall do the investigating? Complete answers are not available, but discussion may prove to be useful.

Poincare has discussed this question and has pointed out that: "There is a hierarchy of facts. Some are without any positive bearing, and teach us nothing but themselves." Poincare also is concerned with a requirement for any fruitful research or investigation in the form of intuition, and he speaks of: "...this intuition of mathematical order, which enables us to guess hidden harmonies and relations..."[20] Again, the entire concept of intuition may not be acceptable to most scientists, and the use of the concept does not help very much with the business of conducting investigations. It is clearly true that the difference between a good scientist and a poor one is the ability to intuit relationships from seemingly unrelated facts and scanty evidence. This intuitive feeling is sometimes treated by laymen as the "imaginative approach," and, while it is undoubtedly good advice for one who wants to succeed, it is approximately in the class of such exhortations as: "Be smart;" "Approach the problem shrewdly;" and "Ever onward for progress." Scientists do get useful generalizations, this much one can see; they use techniques and procedures which can be isolated and cataloged; they may indeed have intuition.

It is generally conceded that scientific inquiry is purposive and not aimless attention to the facts. The usual technique is the hypothesis. An hypothesis states what is being looked for and tries to suggest the operations necessary to find it. Russell, for example, states: "...scientific method consists in inventing hypotheses which fit the data, which are as simple as is compatible with this requirement, and which make it possible to draw inferences subsequently confirmed by observation."[21] The point to be emphasized is that useful hypotheses

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general laws or principles, but in the grasp, so far as possible, of the inifinite variety of particular historical forms immersed in the passage of time." The Philosophy of History in Our Time, ed. Hans Meyerhoff (Garden City, N.Y: Doubleday Anchor Books, 1959), p. 10. This volume of comment and readings devotes an entire section to "The Heritage of Historicism."

[20] Henry Poincare, op. cit., pp. 284, 50. Notice also: "Method is precisely the selection of facts, and accordingly our first care must be to devise a method." Ibid., p. 19.

[21] Bertrand Russell, Human Knowledge, Its Scope and Limits (New York: Simon & Schuster, 1948), p. 311. Alfred Jules Ayer states: "...the function of an empirical hypothesis is to provide a rule for the anticipation of experience. And this means that every empirical hypothesis must be relevant to some actual, or possible experience...." Language, Truth and Logic (New York: Dover Publications, Inc., 1946) p. 41.

must be limited in their scope in a particular form that can be tested by empirical evidence. In some cases the scientist can also invent experiments in the sense that empirical data may be manipulated to test the hypothesis, while in other cases, e.g., astronomy, the researcher usually finds it necessary to wait more or less passively until events confirm or do not confirm his conjecture. It is probably desirable to emphasize again that the evidence does not prove or disprove the conjecture (hypothesis) in any fundamental way, but only establishes instances for its acceptance or rejection. Acceptance and rejection rules that are in accordance with one's standards of belief must also be established.[22]

One of the uses of constitutive definitions and relationships in the theoretical realm arises from the possibility of suggesting further relationships. Thus the existing body of developed relationships (and perhaps the scrapheap of many previously rejected ones!) may help the researcher see possible implications and further relations. Logical relationships and manipulations may give new psychological insights and suggest meaningful hypotheses that can be applied to observable data and tested for relative truth or falsity. The tremendous bundle of theorems and other proofs from abstract mathematical systems may be applied in some cases to existing relationships to suggest further connections and possibilities. Definitions, classifications and constructs may be taken apart and reformulated with new properties added and some old properties sheared off by the usual processes of abstraction. (Usually testing is a more convenient when only one feature is changed at a time.) The operational rules of correspondence that tie the empirical data to constructs may need reexamination and reformulation.

One must not neglect or belittle the possibility that with relatively poor tools (little more than the desire to find uniformities) a research specialist may look over the observable data (facts) and may find relationships of interest. Thurstone has developed loyal followers and jeering opponents for his intermediate scheme known as factor analysis. Hear him.

> One can invent a hypothesis regarding the processes that underlie the individual differences, and one can then set up a factorial

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[22] Russell L. Ackoff argues that a comparison of two hypotheses requires that they have at least one point in common and one in disagreement. He offers the following advice:

"(1) Select a measure of efficiency which is applicable to all the alternative courses of action.
(2) Assign to each alternative course of action a unique set of acceptance conditions based on the selected measure of efficiency.
(3) Reformulate the acceptance conditions as hypotheses; that is, as statements which cover all the possible outcomes of the research and which do not overlap.
(4) Make explicit the assumptions involved in the use of the selected measures of efficiency."

The Design of Social Research (Chicago: University of Chicago Press, 1953), p. 31.

> experiment, or a more direct laboratory experiment, to test the hypothesis. If no promising hypothesis is available, one can represent the domain as adequately as possible in terms of a set of measurements or numerical indices and proceed with a factorial experiment. The analysis might reveal an underlying order which would be of great assistance in formulating the scientific concepts covering the particular domain.
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> In the first case we start with a hypothesis that determines the nature of the measurements that enter into the factorial analysis. In the second case we start with no hypothesis, but we proceed, instead, with a set of measurements or indices that cover the domain, hoping to discover in the factorial analysis the nature of the underlying order. It is this latter application of the factorial methods that is sometimes referred to as an attempt to lift ourselves by our own boot straps, because the underlying order in a domain can be discovered without first postulating it in the form of a hypothesis.[23]

Thurstone's extreme sophistication in the general field of scientific method no doubt kept the jeers down to a moderate level. Obviously the field has been narrowed tremendously from the totality of empirical experience before the process of measurement can even be started. Thus a considerable amount of preliminary classification and delimiting the field of interest within the broader fields of interest must be done. Clearly also a hypothesis of some sort has in fact been used to give rise to the belief that: "Useful generalities are available from the application of X tools to this Y pile of data." The usefulness of Thurstone's approach is that in poorly developed sciences there may often be such a sorry supply of developed relationships that it is extremely difficult to employ them effectively even as an aid to help intuition develop new ones. His method requires the use of only the most general past developments to delimit the field and select scanning devices. He then advocates what might be termed a dynamic programming technique of examining the results at numerous discrete intervals to find if they can be fitted into our previous generalizations. To philosophers with a penchant for the metaphysical world-view such pedestrian attempts to gain knowledge may appear to be base and scrawny. To an empiricist, on the other hand, there is no other way. The results speak for themselves.

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[23] Louis Leon Thurstone, Multiple-Factor Analysis: A Development and Expansion of The Vectors of Mind (Chicago: University of Chicago Press, 1947). Quoted from the partial reprint in Readings in Philosophy of Science, ed. Philip P. Wiener (New York: Charles Scribner's Sons, 1953), p. 197. Morris Cohen remains skeptical: "...it simply is not true that the facts themselves suggest the appropriate hypothesis." Op. cit., p. 80. "Begin with collecting the facts? Ay, but what facts ....the relevant facts of nature do not of their own accord separate themselves from all the others..." Ibid., p. 76.

It is clear that there is no short road or guiding philosophy that will set forth the technique for being shrewd and clever about designing appropriate hypotheses.[24] Yet approaches such as that advocated by Thurstone have heuristic value and should aid investigators in the same sense that explications of prescientific concepts are useful without being definitive. An obvious source of inspiration may be found in related and perhaps neighboring fields. Techniques may be borrowed; definitions may be taken or reworked; classes and methods of subdivision may be used.[25] The pitfalls of analogous reasoning and the dangers of selecting unsuitable analogies are so well known that some investigators have tried to avoid them. Not only are the heuristic advantages of analogies highly useful, but it may be asserted that without the use of analogies there would be no thinking or reasoning, as we know it, at all.[26]

Goode and Hatt have suggested the following possible sources of hypotheses:

> 1. The general culture in which a science develops furnishes many of its basic hypotheses....
> 2. Hypotheses originate in the science itself....
> 3. Analogies are often a source of useful hypotheses....
> 4. Hypotheses are also the consequence of personal, idiosyncratic experience.[27]

There has recently a flurry of discussion about the attention to heuristic methods. The following quotation from B.E. Goetz is illustrative of the more informal approaches.

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[24] S. S. Stevens states: "It [operationism] is not a set of rules telling how to be a bright and original scientist....its method is one which is applied *after* the scientific proposition has been made: it provides criteria for determining whether what *has been* said is empirically meaningful." "Psychology and the Science of Science," *Psychological Bulletin*, 1936, quoted from the reprint in *Readings in Philosophy of Science*, *op. cit.*, p. 165.

[25] Joseph J. Schwab discusses this possibility. "Thus a psychologist proposes that a society or culture be treated as if it were an organism." *Op. cit.*, p. 13.

[26] We cannot enter into the minds of others to observe the thoughts and emotions which we infer from their behavior. We must therefore accept analogy--in the sense in which it goes beyond experience -- as an independent premise of scientific knowledge...." Bertrand Russell, *Human Knowledge*, *op. cit.*, p. 193.

[27] *Op. cit.*, p. 63-66. They continue with some criteria for judging hypotheses. "The hypotheses must be conceptually clear...Hypotheses should have empirical referents....No usable hypotheses can embody moral judgments....The hypotheses must be specific....all the operations and predictions indicated by it should be spelled out....Hypotheses should be related to available techniques....The hypothesis should be related to a body of theory. (pp. 68-70)

> We investigate any phenomena about which we are curious. We measure all input and output factors which seem at all likely to be significant....By rational derivation, by application of dimensional theory, by intuitive insight, or by fumbling with our tabulated data, we formulate a mathematical model that seems to represent the situation.
>
> ....we manipulate inputs and observe outputs, and/or we study the network of interconnections until we arrive at a hypothesis -- a statement as to how we believe changing inputs will affect output ....We can formulate such hypotheses by pure guesswork, and proceed to test out guesses for validity....Since there are at least quintillion of such models....it pays to give much thought to probable relations, to formulate our hypothesis on rational grounds. One help often overlooked is dimensional theory....we finally come out with a hypothesis, usually in the form of an equation....we evaluate any parameters....This yields a specific hypothesis....desired objectives are fed into the model, and the model is manipulated to determine the inputs necessary to achieve the desired goals....and a system of controls and feedbacks established which will signal significant deviations...deviations are investigated and remedial action is instituted. All this happens over and over again, overlapping, feeding back, branching out, cycling and recycling, in an ever-changing, dynamic pattern.[28]

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[28] B. E. Goetz, "Mathematical Models of Management Significance," Advanced Management, February, 1957, pp. 22, 23. In the same informal manner G. Polya has written How to Solve It (Garden City: Doubleday Anchor Books, 1957). Unfortunately only those with well-established reputations are usually willing to undertake such informal and popular discussions. Goode and Hatt have expressed it well. "It is necessary to learn the folkways of the field -- perhaps to sneer coldly at the scientist who 'popularizes' his work..." Op. cit., p. 23.

SOME ASPECTS OF SCIENTIFIC METHOD II

This essay is devoted to some very general consideration that relate to almost all professions. Here they are collected under the general heading of scientific method and are discussed with little or no reference to the particular field of accounting. The more common difficulties of framing definitions, for example, are treated here; but a discusion of specific accounting definitions is found in the essays devoted to semantics. Also the problem of explanation is discussed at this point in connection with causation and is discussed with different emphasis in the essay devoted to evidence and the nature of proof. Many accountants may pass over the current essay and return to other discussions that relate more directly to their professional interest. Others may find the more general discussion useful and worthwhile.

Causation in a Dynamic Science

The concept of causation often appears so obvious to students with accounting training that discussion seems unnecessary. It is precisely this deceptive simplicity that calls for concentrated attention. The uninitiated is likely to associate causation with some sort of compulsion or animism and to spend valuable effort searching for first causes, proximate causes and final causes. Russell wryly remarks: "Scientists do not need to have gods who push the bodies through the heavens."[1] The difficulty appears quickly if one tries to determine the cause of a simple automobile accident. One may follow legal precedent and try to isolate a "proximate" cause or "strategic" action and set up some rules for deciding which individuals had the last "clear chance" to avoid the accident, but for scientific inquiry there must be something more systematic. Why did the driver of the car happened to be there at exactly that time? Why did his wife ask him to make the trip? Why did someone telephone, and she forget to get them on her regular trip? The point here is to emphasize that the so-called effect is a product of its environment, and the assignment of cause to one event as crucial may be useful in some cases, but it may be misleading or dangerous in others.

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[1] Bertrand Russell, The Impact of Science on Society, (New York: Simon & Schuster, 1953), p. 9. Notice Morris Cohen's remarks in the same vein. "When we popularly speak of a thing's causing something else, we undoubtedly tend to attribute to the thing something analogous to human compulsion....Such animism is out of place in modern scientific physics." Nature and Reason (Glencoe: The Free Press Publishers, 1953), p. 224.

Hume, a couple of centuries or more ago, observed that what is usually cause and effect is made up of sequences in time and if the expectation is highly probable the sequential relationship may be considered to be one of causation. Some expressions by Karl Pearson, one of the leaders in the positivist approach to causation follow.

> Scientifically, cause, as originating or enforcing a particular sequence of perceptions, is meaningless -- we have no experience of anything which originates or enforces something else....the idea of causation is extracted by conceptual processes from phenomena; it is neither a logical necessity nor an actual experience (pp. 112, 249).

> That a certain sequence has occured and recurred in the past is a matter of experience to which we give expression in the concept causation; that it will continue to recur in the future is a matter of belief to which we give expression in the concept probability. (p. 99).

> No phenomenon or stage in a sequence has only one cause, all antecedent stages are successive causes, and, as science has no reason to infer a first cause, the succession of cause can be carried back to the limit of existing knowledge....Causation, says John Stuart Mill, is uniform antecedence....(p. 113)[2]

The awareness of the time sequence is highly developed in popular usage. Suppose, it has been said, that an individual sneezes immediately after hearing a cock's crow. This correlation and expectation would be treated as a cause and effect relation after experience has verified the sequence a number of times. This kind of temporal correlation is highly spurious to some, but it may help expand existing knowledge of facts and relationships by searching for supporting evidence that makes one feel more comfortable with the correlation, i.e., increases the subjective probability of the relationship's continuing. Many statisticians and philosophers, including Morris Cohen, do not find a record of experienced sequences strong enough to support belief in continuance without independent support and insist on the adjective "spurious."[3]

While it is not difficult to understand the different evidence needed for belief in such cases, the term spurious seems to be a little extreme. Some scientists take a somewhat different tack and insist that when the succession relationship becomes familiar, there is no longer a tendency to employ the cause-effect approach. Ernst Mach, for example, writes:

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[2] Karl Pearson, The Grammar of Science (Everyman ed.; London: J. M. Dent & Sons, Limited, 1937), pages as noted.

[3] "...we need evidence to support the belief that...correlation is permanent and not temporary.... It [science] founds our assurance of a real connection not merely on the fact that such sequences have been observed but on an analysis which shows elements of identity between antecedent and consequent." Morris Cohen, Reason and Nature, op. cit., pp. 92, 103.

> There is no cause nor effect in nature....Let a fact become familiar, and we no longer require this putting into relief of its connecting marks, our attention is no longer attracted to the new and surprising, and we cease to speak of cause and effect.... Acid is said to be the cause of reddening of tincture of litmus; but later we think of reddening as a property of the acid....In nature there is no law of refraction, only different cases of refraction.[4]

This explanation states in effect that among the defining properties (predicates) there may be relationships that can be expressed in the language of cause and effect. Clearly not all temporal relationships appeal to us as cause-effect relationships. Normally we do not assume that the day causes the following night. Moreover, we tend to think of table legs causing the table top to stand. No succession is involved in this case. In fact, with the involvement of space and time in space-time concepts, physicists too were encouraged to re-examine their concepts of sequence and of causation.

Bridgman, as a philosophical physicist, has presented a modern commentary on causation for the complications of modern science. Bridgman points out that causation is a type of explanation.

> When a causal analysis is possible, finding the simplest events which act as the origin of independent causal trains is equivalent to finding the ultimate elements in a scheme of explanation, so that here we merge with the concept of explanation....the thesis of essential connectivity...is perhaps the broadest we have: it is the thesis that differences between the behavior of systems do not occur isolated but are associated with other differences. It is essentially the same thesis as..."explanation," namely that it is possible to correlate any of the phenomena of nature with other phenomena.[5]

The narrow relationship between a single event and its successor is usually too simple for an explanation of causation or even for the simplest stimulus-response patterns that are found so often in psychological writings. One must remember that any result is a joint product in the sense that it is the product of an entire environment. Ackoff states:

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[4] Ernst Mach, The Science of Mechanics, reprinted as "The Economy of Science," Readings in Philosophy of Science, op. cit., pp. 447, 448.

[5] P. W. Bridgman, The Logic of Modern Physics, op. cit., pp. 89, 82-83. Apparently causation here has a higher degree of probability (one) than is necessary to qualify as explanation. Tobias Dantzig stresses the connectivity feature. "...the doctrine of causality, by linking all phenomena into one continuous chain, safeguards our future against all spontaneous disturbances and protects us against the horror of chaos....our belief in the continuity of the universe and our faith in the causal connection between its events are but two aspects of this

> The effect that an object, event, or property has on another always depends on its environment, and hence the object, event or property is never sufficient for the effect.[6]

A satisfactory definition can be drawn up to characterize causation as a past correlation combined with faith that the correlation will persist. Model makers in the field of economics and business have often been from engineering and other practical fields and have been impatient with fine distinctions of this sort. Whether we call the relation causation or something else, a good hypothesis (or a good model of a complicated system) must arrange the variables so that the effects of a change in the input somewhere in the system can be determined in the measured outputs. It goes without saying that the construction of experiments to test scientific hypotheses and models is usually easier when the inputs or "causes" are juggled, for in most cases it is more difficult to manipulate the outputs directly. Goetz remarks:

> ...the physicist observes inputs and constructs models to predict outputs. The more rational branches of engineering reverse this process. The engineer begins with the desired outputs, and uses the physicists' models to predict the inputs necessary to achieve the stipulated outputs.[7]

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primitive intuition that we call time." Number, The Language of Science (New York: The Macmillan Company, 1959), pp. 168, 169.

[6] Russell L. Ackoff, The Design of Social Research (Chicago: University of Chicago Press, 1953), p. 65. Bridgman concurs: "We do not have a simple event A causally connected with a simple event B, but the whole background of the system in which the events occur is included in the concept, and is a vital part of it. If the system, including its past history, were different, the nature of the relation between A and B might change entirely. The causality concept is therefore a relative one..." The Logic of Modern Physics, op. cit., p. 83.

[7] B. E. Goetz, "Mathematical Models of Management Significance," Advanced Management, February, 1957, p. 21. Model building covers more ground than hypothesis building and includes some looser arrangements, but clearly the objectives are similar and it is not too great a violation of language to use hypothesis to cover models. The following comments by Goetz apply just as well to hypothesis formation. "Often it takes great ingenuity, brilliant technique, and endless patience to identify all of the significant input and output factors, to hold all but two precisely constant, and to measure the varying input and output factors precisely and concurrently....We must vary or allow to vary, every important factor we seek to investigate....We may get rid of others by randomizing.... Randomizing this variable...cancels it out of our results allowing us to investigate the effects of other variables." Ibid., p. 23.

It should be observed that the desirability of reversing the operation is important in management and in any other behavioral situation where the goals are pretty well established and the problem is to find appropriate inputs. In the field of history reverse operations are a necessity. The problem in history is to explain a set of conditions at time t_n in terms of a series of sets of previous conditions. One set of previous conditions is usually taken as a cutoff and named the 'initial conditions.' Most changes can be determined with tolerable accuracy, and the problem is often to infer "causes" that account for (explain) the known or assumed changes.

One point should be emphasized: while the current conditions are the results or effects of the entire process of practically everything that went before, in order to get anything done at all, one must narrow the field and define a new "system" which is small enough so that he can isolate and specify antecedents and consequents. In fact, the current situation may not depend on everything that has ever happened, and there is little reason to believe that all events are related. It is one of the virtues of science that it did not try to establish a grand scheme of total relationships in the manner of the typical metaphysician, but instead, attacked small areas in which it was possible to organize sensory experiences with regard to uniformities and immediate relationships.

Bridgman discusses the possible inability to use logical precision when "initial conditions" embrace the entire past history of the system, and he is cautious about the possibility of defining initial conditions apart from the future of the system. In the realm of physics with its mixed up concepts of space and time, there is also speculation about: "...whether we can separate into cause and effect two phenomena which *always* accompany each other, and whether therefore the classification of phenomena into causally connected groups is an exhaustive classification."[8] In this connection, the emphasis on teleological explanation with its system of objectives and available alternatives deserves brief discussion. This type of "means-to-ends" explanation is akin to "whither" definitions and proceeds by specifying the goals to which activity is directed.[9]

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[8] P. W. Bridgman, *The Logic of Modern Physics*, *op. cit.*, p. 91. The following comments from pp. 80, 81, illustrate. "We assume in the first place an isolated system on which we can perform unlimited identical experiments, that is, the system may be started over again from definite initial condition as often as desired. We assume further that when so started, the system always runs through exactly the same sequence of events in all its parts....An alternative way of stating our fundamental hypothesis is that two or more isolated similar systems started from the same initial condition run through the same future course of events....in nature, as we observe it, there is no such thing as an arbitrary change, without connection with past history..."

[9] For an excellent discussion of teleological and other types of explanations with emphasis in the former case on biological rather than organizational aspects see R. B. Braithwaite, *Scientific Explanation* (New York: Harper and Brothers, 1960), pp. 322-341.

Explanations are then expressed in terms of the ends of certain accepted goal-directed activity. In biology, the beating of the heart may be accounted for (explained) by reference to the objective of circulating blood. The president of a concern work so hard because he wants to leave a stronger corporation than he found. Such explanations are "first stage," are functional in structure, and they may or may not put your curiosity to rest. Certainly, they are a necessity for one who uses the holistic or organic approach to scientific enquiry.

Braithwaite states:

> In a causal explanation the explicandum is explained in terms of a cause which either precedes or is simultaneous with it: in a teleological explanation the explicandum is explained as being causally related either to a particular goal in the future or to a biological end which is as much future as present or past.[10]

He stresses further that these ends are related to Aristotle's "final causes" and that "intentions" tend to become causes and are also effects. Clearly the ends (effects or goals) return to the reasoning process in the guise of a cause if the more traditional causal approach is used. Braithwaite emphasizes also that modern philosophers tend to take either of two paths. They may take the view that: "A teleological explanation is to be regarded as a very poor sort of explanation indeed, to be discarded as soon as the real, physico-chemical causes have been discovered."[11] They may tend to doubt that physico-chemical explanations can ever be sufficient to explain all teleological behavior and tend to postulate some property for the organism such as purposiveness or drive or operant behavior patterns. This postulated quality may be observed in action so that sufficient confidence is established for it to be used as a so-called cause of behavior in this and other parts of the organism.[12]

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[10] Ibid., p. 324.

[11] Ibid., p. 327.

[12] Braithwaite insists on the use of "postulating" in this connection, but it should be noted that observation can establish our belief in the presence of such ends, and that all scientific belief is "postulated" in this sense. He also stresses that the attribute or property is applied to the organism as a whole or at least a larger set of its properties than those being explained. "...the drive or conatus or nisus or urge -- is usually posited not in the separate organ but in the organism as a whole -- an urge towards self-preservation, for example ....writers....agree in postulating something in the organism which is present whenever goal-directed behaviour is taking place and which is to explain it in the ordinary causal way, and agree in supposing that this something cannot be analysed purely in physico-chemical terms." Ibid., p. 326.

It should be noted in passing, that accountants use causation most often in the sense of goals and needs. In a similar fashion their use of "logical" is most often related to whether individual actions are consistent with objectives. Thus whether a particular action is consistent with goals is an interpretation of the logician's use of logical, which concern the consistency of a statement with others and with the allowed rules for manipulating statements. We must supplement the rules for determining the consistency and validity of new statements with rules for determining whether actions are consistent with ends. So far, social scientists and accountants have not developed a vigorous set of such rules.[13]

Some Problems of Definition

> ...what is set out as a measure of net income can never be supposed to be a fact in any sense at all except that it is the figure that results when the accountant has finished applying the procedure which he adopts.[14]

The problem of definition in accounting and all other fields offers a challenge, and it offers pitfalls that may lead to serious confusion and trouble. To many investigators definitions are the result of applying the process of abstraction -- shearing off properties and relationships that are not relevant for the immediate purpose. Thus, the expression "truncated descriptions" has been applied.

The accountant must be familiar with the extreme form of operationalist definition which, for example, can define dexterity as that which is tested by dexterity tests. Bonbright at an early date brought operational definitions to the field of business valuation. "As with other economic terms...so with 'value,' the very meaning of the word

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[13] Many attempts have recently been made to define rational behavior. These definitions usually stress consistency of actions with objectives in some sense. Garfinkel recently found rational behavior defined in many ways including: (1) empirical adequacy of means; (2) stark fact that experiences are searched for means; (3) degree of attention to the fit between observation and intentions; (4) frequency of review of past rules ~~o~~ procedures that have led to accomplishment; (5) analysis of alternatives and their consequences; (6) concern and rationality for timing and sequence of effects (predictibility). Garfinkel distinguishes between "Cartesian" rules of procedure that neglect personal consequences and "tribal" rules that incorporate interpersonal feelings in the decision rules. The question of consistency of means and objectives as an extension of logic is not discussed directly. Harold Garfinkel, "The Rational Properties of Scientific and Common Sense Activities," Behavioral Science, V (January, 1960), pp. 72-83.

[14] John B. Canning, The Economics of Accountancy (New York: Ronald Press Company, 1929), pp. 98-99.

is conditioned by the methodology of estimating its quantitative amount."[15] Before leaving the subject of definition, we would like to examine some non-operational definitions for substance and import and to formulate an appreciation of the usefulness of definitions and the definitional process.

It is convenient to divide knowledge into two interconnected regions, and we will follow the positivists and operationalists in their division between syntactics and semantics. The sea of observational data which is thought of as the empirical domain is searched for uniformities, generalities, and other bases for abstraction. From this empirical evidence, constructs or concepts are formed. Constructs that are related directly to observational data are defined in terms of operational definitions. That is, they are defined by giving a package of instructions that cover the procedure necessary to identify the concept and to differentiate it from others. These constructs are connected to the empirical data by what are sometimes known as "rules of correspondence" or "rules of assignment." Inasmuch as "facts" are abstractions of an uncomplicated nature, many of these definitions relate to facts, i.e., they specify which data are relevant.[16] There must be no confusion of constructs with phenomena.[17]

Definitions that relate constructs to referents (to empirical data) are known as operational definitions. Clearly however there are other types of definitions, and unfortunately they often give trouble. These definitions when properly formulated and stated, tend to give the formal relationships of constructs to one another. Thus in the framework of single-entry bookkeeping proprietary interest is defined in

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[15] J. C. Bonbright, The Valuation of Property (New York: McGraw-Hill Book Company, Inc., 1937), I, p. 12.

[16] George S. Odiorne states: "The predominant philosophy of science held by most O.R. men is one which is sometimes identified as 'positivism.' As positivists, they assume any scientific system as a hierarchy in the form of a pyramid. At the base are the observed facts. The next level above them are simple laws that connect them, a few facts at a time. At the next higher level, are general law which connect these laws. Finally, above all, are a few grand generalizations which connect these tertiary level laws." "The Basic Limitations of Operations Research in Industry," The Journal of Industrial Engineering, September-October, 1957, p. 267.

[17] "Because we deal directly with only the concept....it is obvious that we may times confuse the concept with the phenomenon it is supposed to symbolize....'reification.'" William J. Goode and Paul K. Hatt, Methods in Social Research (New York: McGraw-Hill Book Company, Inc., 1952), p. 41. Susanne K. Langer speaks of "....the correlation of symbols with concept and concepts with things, which gives rise to a 'short-cut' relation between names and things, known as denotation...." Philosophy in a New Key (New York: Mentor Books, 1959), pp. 74-75.

in terms of two other constructs, i.e., assets and liabilities. These latter are tied to empirical data thorough rules of correspondence (definitions) that give instructions for identifying and measuring them. The kinds of definitions that tie constructs to one another were named by Margenau "constitutive" definitions, and constructs that are related to other constructs by such definitions and relationships are said to have *theoretical* or *systematic* import. Torgerson points out that a given construct may have several constitutive and several epistemic (operational) definitions. He integrates definitions to a theoretical structure and model.

> As against the constitutive definition of constructs, which must, of and by itself, be circular, a satisfactory theory contains constructs that are also defined, not in terms of other constructs in the set, but rather, directly in terms of observable data.... Indeed...a model does not become a scientific theory *until* a sufficient number of its terms possess such *operational or epistemic* definitions....in order to be useful, *all constructs must possess constitutive meaning*. They must permit themselves to take part in the formation of laws and theories. However, it is *not* necessary that *all* constructs possess a direct operational definition....they *must* at least be connected with observable data indirectly through other constructs that do. Constructs with neither direct nor indirect empirical meaning can serve no explanatory purpose at all.[18]

The chief difficulty of defining concepts in terms of operations, e.g., "Temperature is what thermometers measure," is that the process leaves the idealized concept that is trying to be defined without status and leaves out of account the obvious motivation of scientists and other intellectuals for trying to refine and improve their measurement rules, e.g., their definitions. From one point of view a thermometer of the ordinary type is a measure of the changes in volume of some material. Apparently we feel that this change may be used as an index or measure of something else that we are at the time far more interested in than the expansion of the material. It is extremely difficult to appraise operational definitions in terms of the more idealized and purposive constructs they are designed to represent. Feigl states:

> Empirical laws unable us to define the same concept by different operational routes....Nevertheless, Bridgman's warning to the effect that different operational routes define *different* concepts is not unjustified: The convergence of operational results is to be taken for granted only until further notice, i.e., until evidence to the contrary emerges.[19]

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[18] Warren S. Torgerson, *Theory and Methods of Scaling* (New York: John Wiley & Sons, Inc., 1958), pp. 4-5.

[19] Herbert Feigl "Operationism and Scientific Method," *Readings in Philosophical Analysis*, ed. Herbert Feigl and Wilfrid Sellars (New York: Appleton-Century-Crafts, Inc., 1949), p. 504.

What is of concern here is the purposive aspect of definitions. How are they formed? In response to what needs? Which ones survive? Why are some rejected or changed or refined? To answer these questions requires some knowledge of the relationship between theory and practice. Constitutive definitions are developed from other definitions, and are suggested by them. To the extent that they can be measured only by their relationships to other constitutive constructs, they may have no specific rules of correspondence (operations). Thus it is possible to derive all sorts of relationships, develop new constructs and definitions without coming down to the empirical level through direct operations at all. These theoretical counstructs may however be capable of being related directly to the empirical world through an independent series of operations. This possibility offers a challenge to investigators and often plays a major part in hypothesis formation and the direction of new research. Temperature may be defined constitutively in terms of other constructs, but such definitions should help and encourage the researcher to find direct operations that will also serve as definitions and to compare the definitions and refine them so that the most useful and accessible will survive. As an example, net worth may be defined constitutively in terms of assets and liabilities and then supplemented by additional rules of correspondence that measure assets and liabilities operationally. It is possible alternatively to devise some scheme of accounts that will measure net worth by instructions that relate directly to the measurement of contribution, revenues and expenses. These alternative operations (measurement and recognition rules) may be consistent so that the measurements turn out the same for either definition. In some cases the rules may not quite be identical so that a balancing factor or "estimating error" must be introduced. (For a large *difference* consider a definition of net worth in terms of the market value of the equities.) Notice that the term "error" implies that one of the definitions is more firmly entrenched than the other.[20]

The insights that come from relationships between and among constructs help guide research with the hope of finding usable hypotheses and forming new definitions. In a well-developed science it is possible to move around with remarkable freedom from construct to construct none of which can be identified operationally in a direct sense. In fact a number of such concepts may have no empirical meaning in terms of observables, and many of them in physics apparently have no intuitive meaning whatever except as intermediaries between other constructs. This flitting around from construct to construct without being able to identify them empirically is acceptable so long as each is related to others that can be defined operationally and related to empirical data. It is

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[20] Russel Ackoff states: "It is not enough to decide that a concept is a pertinent. We must make explicit (1) the conditions under which and (2) the operations by which the pertinence can be investigated ....The functions of a scientific definition of a concept, then, is *to make explicit the conditions under which and the operations by which we can answer questions about that which is conceptualized.* Scientific definitions should be *directive*; they should tell us *how* to investigate..." *The Design of Social Research* (Chicago: University of Chicago Press, 1953), pp. 55-56.

generally agreed that for scientific work all constructs must be related to experience directly or indirectly.[21]

There are certain well-known and circulated aids for construction of definitions. It should be obvious that one does not work up a good supply of them to have handy in case they are needed, for a definition is ordinarily made in response to some sort of need.[22] Feigl has given as excellent summary of the requirements for a good definition for scientific work. It is, in short, a list of constructions for constructing definitions.

> Concepts which are to be of value to the factual sciences must be definable by operations which are (1) logically consistent; (2) sufficiently definite (if possible, quantitatively precise); (3) empirically rooted, i.e., by procedural and, finally, ostensive links with the observable; (4) naturally and, preferably technically possible; (5) intersubjective and repeatable; (6) (6) aimed at the creation of concepts which will function in laws or theories of greater predictiveness.[23]

Many authors have given advice about connotative and denotative definitions, and it is well to examine this advice. In mathematics, for example , the members of a set are identified by giving a list (denoting the members) of members or by giving a rule or set of rules that will permit the identification of a member and the rejection of non-members. Some mathematicians however have not understood that neither the list nor the set of rules have anything whatever to do with mathematics. Both have bearing and meaning only in the empirical area, and pure mathematicians need insist only that the classification be specifiable and by definition be capable of entering certain types of relationships.

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[21] Bridgman emphasizes this point. "There are many sorts of constructs: those in which we are interested are made by us to enable us to deal with physical situations which we cannot directly experience through our senses, but with which we have contact indirectly and by inference....We can never experience directly through our senses the inside of such a solid body....A stress is then by its very nature, forever beyond the reach of direct experience, and it is therefore a construct....The essential point is that our constructs fall into two classes: those to which no physical operations correspond other than those which enter the definition of the construct, and those which admit of other operations, or which could be defined in several alternative ways in terms of physically distinct operations....(the atom) is evidently a construct, because no one ever directly experienced an atom, and its existence is entirely inferential." Op. cit., pp. 53, 54, 59-60.

[22] Henri Poincare in Science and Method (New York: Dover Publications, Inc., n.d.) has devoted considerable attention to definitions "A definition is stated as a convention....But the choice of a name is not arbitrary either; we must explain what analogies have guided us...." p. 132.

[23] Herbert Feigl, op. cit., p. 508. Russell Ackoff offers the

The fundamental operation for classification, to which definition may be compared is that of discrimination, Stevens, a psychologist, points out:

> When we attempt to reduce complex operations to simpler and simpler ones, we find in the end that discrimination, or differential response is the fundamental operation. Discrimination is prerequisite even to the operation of denoting or "pointing to," because whenever two people reduce their complex operations for the purpose of reaching agreement or understanding, they find that unless they can each discriminate the same simple objects or read the same scales they still will not agree. Agreement is usually reached in practice before these most elementary operations are appealed to.[24]

Thus, making up a set of rules of correspondence to tie the contruct to empirical data very often leads to establishing rules of measurement, but such is not always the case. In some cases the rules call for the recognition of a quality or the absence of it, and the operation is identification instead of measurement.[25]

The accounting profession owes a debt of gratitute to Vatter for bringing a serious discussion of definition to accounting literature, although his own attitude with regard to ideal definitions is not clear.[26] For an illustration to set forth the anatomy of one of the better ac-

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following guides. "(1) Examine...definitions of the concept, past and present....Seek the help of others....Keep the chronology...in mind. (2) Try to get at the core of meaning... (3) Formulate a tentative definition based on the core. (4) See if the tentative definition covers all the cases you think it should, relative to your research objectives .... (5) Submit the definition to as wide a critical appraisal as possible." Op. cit., pp. 56-57.

[24] S. S. Stevens, "Psychology and the Science of Science," Psychological Bulletin, 36 (1939), pp. 221-263. Quoted from the reprint in Readings in Philosophy of Science, ed. Philip P. Wiener (New York: Charles Scribner's Sons, 1953), p. 164. Ackoff emphasizes the same point. "Before the individual members of a class can be identified, we must know what properties identify them as class members. Consequently, a connotative definition is a prerequisite for constructing a denotative definition." Russell Ackoff, op. cit., p. 63.

[25] Measurement requires discrimination of differences (jnds, limons) and it has been argued by Steven and others that classification -- discrimination between presence and absence -- is also measurement.

[26] William J. Vatter, The Fund Theory of Accounting and Its Implications for Financial Reports (Chicago: University of Chicago Press, 1947).

counting definitions, let us choose: "An asset may be defined as any consideration, material or otherwise, which is owned by a business enterprise (or in which the enterprise has an equitable interest) and which has a value to the enterprise."[27] This definition -- an old one -- is selected because Vatter criticized it in the following manner. "...it is not operational in content; it does not specify the things that must be done to establish the presence or the absence of an asset, and it does not clearly mark out what tests are to be applied in distinguishing assets from other things. The meaning of this definition depends upon a number of things that are not specified within it. What operations are involved in recognizing a 'consideration,' in establishing the existence of ownership or equitable interest, and in measuring the value to the business enterprise?"[28]

It should be noted first that the definition asserts the necessity of the conjunction of three criteria -- the logical product of three sets or collections of which one may be the sum of two alternative classes. First, to be an asset the item must be a consideration. Second, it must be attached to an enterprise in the relationship of ownership or of equitable interest. Third, it must have the relationship of being valuable to the enterprise.

It should be remembered that every definition does not have to contain "within" itself a full set of instructions in order to be considered operational. The first instruction is one of discrimination and delimitation. Does the item under survey meet the tests for inclusion as consideration or doesn't it? (The instruction not to be concerned with whether it is material would ordinarily be unnecessary, but in the past accountants sometimes have taken peculiar attitudes toward non-material assets.) This part of the definition is then constitutive in that it relates asset to consideration and assumes that the operational rules for discriminating a consideration are known, are available directly or can be found by continuing the chain of constitutive definitions. Vatter would seem to have a case in that the usual definition of "consideration" is so fuzzy and confused with other similar legal terms that the operational rules for delimiting a consideration are not drawn sharply enough. The rules of correspondence and constitutive relationships of "owned" or "being an equitable interest" are set forth with some definiteness as legal doctrines. While there is always difficulty in making borderline discriminations and as a result there is a universal criticism of the discriminatory process, the instruction to find either the relation of equitable interest or ownership is the requirement of a logical sum with reasonably well-defined instructions for determining the members of the classes involved.

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[27] W. A. Paton, Essentials of Accounting (New York: The Macmillan Company, 1938), p. 23. A later version and slight revision may be found in the Paton and Paton revised edition of 1949).

[28] W. J. Vatter, op. cit., pp. 14-15.

The final constitutive element is also an instruction -- an instruction to find the relationship of value to the enterprise for which there are appropriate identification operations. Unfortunately economists and accountants do not agree on the rules that should be followed to measure value, but they are reasonably close together in accepting rules for recognizing the presence of the relationship.

We must conclude then that Vatter's criticism is considerably more harsh than seems to be justified.[29] A little consideration will show that all accounting definitions are of this type except the comparatively rare nominal definitions which give other names for the constructs involved. An example of the latter type of definition with a slight restriction is the definition of debit and credit. When the field is appropriately limited, debit and credit are substitute names for left and right, and are excellent examples of nominal definitions. The terms "journal," "ledger," and "account" are not nominal for they do not replace another set of appropriate symbols. In each case operations of identification of certain aspects must be performed. "Ledger" is an excellent example of a constitutive definition in terms of the definition of "account," so that all instructions are indirect and involve determining the presence of accounts.

It is the intention to close this essay on scientific method by considering some of what Schwab calls the "principles" of scientific endeavor.[30] The function of such principles is to analyze the subject matter and delimit its scope so that it can be attacked by acceptable methods.

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[29] Incidentally Vatter's own structure in the Fund Theory contains some first-class definitions even if one does not agree with all the instructions. He defines assets as service potentials, fund as a purposive arrangement of assets, liabilities as restrictions on assets, revenues as inflows of restriction-free assets, expenses as releases of service potentials. This is a tidy definitional structure, and the student may wish to separate the constitutive and operational levels as an exercise. Strangely enough Vatter quotes the following quotation from Paton and Littleton with approval. "...those factors acquired for production which have not reached the point in the business process where they may be treated as 'cost of sales' or 'expense.' ....Under this usage, assets or costs incurred would clearly mean charges awaiting future revenue, whereas expenses or costs applied would mean charges against present revenue." See An Introduction to Corporate Accounting Standards (Chicago: American Accounting Association, 1940) pp. 25-26. Vatter's approval is expressed in op. cit., p. 15. One of Vatter's own less desirable definitions is: "Assets...are embodiments of future want satisfaction..." (p. 17). One looks expectantly for operational instructions for disembodying satisfaction and for "releasing" service potentials.

[30] Joseph J. Schwab, "What Do Scientists Do?" Behavioral Science, V (January, 1960), pp. 1-27. The present discussion follows rather closely the ideas set forth by Schwab.

> The first specific service of principles to the course of enquiry is to provide it with terms in which to couch its problems....the principle then determines what shall constitute the data required by the enquiry and outlines the procedure which will elicit the required data....Finally, the principles of an enquiry restrict the form which knowledge of the subject will take by indicating how the data are to be interpreted....Of principles in this sense we find five kinds: reductive, rational, holistic, anti-principled and primitive.[31]

Thus principles, to Schwab, are the results of decisions as to how the inquiry should be conducted and the area or field that is to be covered. Principles, in this sense are closely related to the rules of correspondence that relate to objectives and selection and application of procedures - they are a part of the theory. The latter term -- which appears in the title of this volume -- is ill defined and probably ought not to be used in careful discourse. The term theory, as has been pointed out earlier, usually refers to the whole logical apparatus including the rules of correspondence and the theorems. Usually when theory is used in the singular it refers to some constitutive relationship between levels of constructs or a relationship that has been demonstrated between the observable data and the constructs, i.e., established rules of correspondence or interpretations.[32]

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[31] Ibid., pp. 2-3.

[32] A good definition in the usual mold without referring to the singular is the following from Eric L. Kohler, A Dictionary for Accountants (New York: Prentice-Hall, Inc., 1952), p. 424. "A set of propositions, including axioms and theorems, which together with definitions and formal or informal rules of inference is oriented towards the explanation of a body of facts or treatment of a class of concrete or abstract operations." W. . Stanley Jevons long ago pointed out that the term was an undependable one. "In reality the word [theory] is highly ambiguous, being sometimes used as equivalent to hypothesis, at other times as equivalent to general law or truth....When a word is really used in an equivocal manner...it is not desirable to attempt to give it an accurate definition which would be imaginary and artificial." Elementary Lessons in Logic, op. cit., pp. 274, 275. A. C. Littleton takes a different angle from that of Kohler. "...theory, as explanations, reasons, justifications, does not contemplate producing 'a' theory, that is, a didactical arrangement of ideas which persuasively presents a series of compact propositions, beginning with a broad, distant premise...and emerging at a predetermined point with a more-or-less predtermined conclusion. "Choice Among Alternatives," The Accounting Review, July, 1956, pp. 363-364. R. G. D. Allen uses theories to indicate only rules of interpretation (rules of correspondence). "Theories only arise in a particular subject matter....The theories then involve clothing the premises with a certain 'real life' garb and in interpreting the logical or mathematical consequences in the same way." Mathematical Economics (London: Macmillan & Co. Ltd., 1956), p. xv.

DR Scott would be more or less in agreement with Schwab in that he relates the term principles with those constitutive relationships that tie a given area to other areas, i.e., bounds the field.

> General statements relating accounting rules and procedures to underlying social principles might well be called accounting principles.[33]

Schwab explains carefully how the findings of science are ranked and appraised by scientists themselves.

> The four criteria [by which judgments are made] are: interconnectivity, adequacy, feasibility, and continuity. Interconnectivity concerns the extensive domain of subject-matters subsumed by the proposed principle. Adequacy concerns its intensive domain, the degree of complexity or "completeness".... Feasibility concerns the ease, economy, precision, and consistency with which the data required by the principle can be collected. Continuity concerns the ease or difficulty with which the new principle can be made to contain the bodies of knowledge previously formulated...[34]

The general distinction and emphasis on the difference between validity and reliability serve a useful purpose, and it is often possible to classify research workers by this distinction. Again to quote Schwab.

> To many validists, the reliableist is a man without imagination or one of timorous caution, or one who deliberately pursues unexceptionable and frequent exhibition of "research activity" while others take on the difficult tasks. To many reliableists the validist is unsound or romantic; unappreciative of rigor and precision as the marks of science; too easily moved by the vague claims of commonsense; unskilled in the use of Occam's razor.[35]

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[33] DR Scott, "The Basis for Accounting Principles," The Accounting Review, December, 1941, p. 342.

[34] Joseph J. Schwab, op. cit., p. 14. Note also. "Reliability stands for the following cluster: the extent to which the terms of a research program are free of vagueness and ambiguity; the extent to which the referents of the terms are given distinct and unequivocal location and limit; the extent to which the manipulations and measurements indicated by the terms can be undertaken with precision and repeated with uniform consequences....Validity stands for...the extent to which the terms of a research program approximate the presumptive richness and complexity of the subject-matter; the extent to which abstraction, in its sense of simplification by removal from context, is eschewed as a species of cheat." Ibid., p. 18.

[35] Ibid., p. 19. Economists have often taken the position that accountants are the worst kind of reliableists. Perhaps an approximate contrapositive relationship holds.

The methods of science seem extremely simple to philosophers. One of the requirements is that the research worker have a tremendous respect for the facts. Whether the rules of logic and mathematics are considered to be empirically derived or metaphysical entities has not influenced scientific development greatly. Those who feel that logic and mathematics are a "deeper truth" and not empirically determined merely segregate their "metaphysics" and use it as a weapon to unearth new relationships and facts. It is a rule of scientific method that if the metaphysical assumptions are disproved by the data, it is the metaphysics that must be changed or discarded. It was not always thus.

We may conclude by asking what kind of men go into scientific work? What are their individual aims and status symbols? Who supports the activity?

Certain kinds of science will obviously be supported in our present kind of society by those who are following the self-interest or profit path. Even some so-called basic research will be carried on in a society of this kind. Nevertheless, it is extremely difficult for any concern in a really competitive society where semi-monopolies are weeded out ruthlessly to be in a financial position to carry on large activities in the pure fields. Furthermore, there are areas in which the benefits of the results cannot be constrained to one cash register and the results are beneficial to the community. Dewey argued that science had humble beginnings from trying to expand common-sense knowledge and is still humble in trying to do the same thing in spite of isolated areas of arrogance. Social approval or disapproval is of course necessary to provide the financial support and to confer status on those who carry on the activity. Many have noted the reversal of attitude that moved from calling scientists "gadgeteers" to the real status level that supports them since the intellectual war with Russia began.

Definition - A Technical Digression

The leading thinkers for twenty or so centuries followed Aristotle in using the genus and species approach to definition. This method consisted of specifying the genus to which the item belongs and then specifying the specific characteristic which differentiated it from others of the genus. Examples are common: wives =df female spouses; assets= df considerations having value to the entity. This kind of definition seeks to define in terms of logical product. (Overlap in the Venn sense.) Wives are those members who belong to the set of females and also belong to the set of spouses. Assets are members of the set collection or class) of properties and also members of the collection consisting of things of value to the entity. As will be pointed out later this type of definition is too narrow and has some other short-comings for use in the scientific world although for ordinary discourse it can usually be made to work.

Perhaps the most useful definition in mathematics is the badly named "nominal" definition that is in effect a stipulation that the meaning of the terms to be defined -- the definiendum -- must be synonymous with the meaning of a term -- the definiens -- whose meaning is already understood. A nominal definition of a liability for accounting purposes could be: Let it be stipulated that the term 'liability' is synonymous with the expression 'legal obligation.' Nominal definitions are "names" (they are often referred to as verbal definitions), and may be substituted for their synonymous expressions at any time. "...the nominal definition of a term has to satisfy only one basic requirement: it must enable us to eliminate that term, from any context in which it can grammatically occur, in favor of other expressions, whose meaning is already understood."36

Perhaps the instruction to avoid circularity deserves a note. From one point of view, all verbal (nominal) definitions must inevitably be circular. In logic and in rigorous mathematics a theory is set forth by expressions involving primitive (undefined) symbols and other expressions in the nature of axioms. Definitions therefore usually have some order relation. The first defined term must be expressed in terms of primitive symbols. The second definition may be formulated with the aid of the primitive symbols and the first definition, etc. Thus it makes sense to talk about preceding definitions. Clearly to the extent that the definitions are verbal this ordering is not actually required, for all definitions could be constructed from the primitive (undefined) terms. The charge of circularity is avoided by the introduction of these undefined or primitive terms, but as is pointed out elsewhere some intuitive knowledge of the meaning of these terms is understood or taken for granted. A further point interests us here: "...it is not intended that a definition shall strengthen the theory in any substantive way. The point of introducing a new symbol is to faclitate deductive investigation of the structure of the theory, but not to add to that structure...a new definition does not permit the proof of relationships among the old symbols which were previously unprovable; that is, it does not function as a creative axiom."37

It would be possible to set up all sorts of verbal definitions that make no sense whatever, but for practical purposes the formation of these definitions is not arbitrary. In addition to the requirement that they be equivalence relations (e.g., the definiendum must be synonymous with the definiens) and that they be reducible to primitive terms, they must be noncontradictory and useful. Hempel emphasizes that scientific concepts are expected to function in "fruitful theories" so that a selective force is at work to

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[36] Carl G. Hempel, Fundamentals of Concept Formation in Empirical Science (Chicago: University of Chicago Press, 1952), p. 6. The current discussion leans heavily on Hempel's work.

[37] Patrick Suppes, Introduction to Logic (Princeton: D. Van Nostrand Company, Inc., 1957), p. 153.

~~to function in "fruitful theories" so that a selective force is at work to~~ reduce the number of arbitrary definitions.[38] This selective process tends to channel concept formation and to limit those who feel that the first task of a discipline is to construct a supply of definitions.

A research scientist or mathematician~~s~~ may therefore make wide use of verbal definitions that are set up in precise ways to meet current needs. The ordinary worker (especially economists and accountants) has more trouble, for he often redefines common terms. Here he is confronted with problems of: (1) *determinancy* of terms in the sense of their uniform usage among different users and (2) *uniformity* of terms in the sense of constancy of meaning from discourse to discourse or through time. There can be no doubt that much useless discussion at the higher levels of abstraction is due to lack of determinancy and uniformity, e.g., ambiguity of terms. There is also a danger of *ad hoc* or impromptu definitions in ordinary discourse, for these definitions may become tricks of argumentation. Many times there is little or no similarity between the meaning of supposedly identical terms, and the unwary may find themselves "arguing" about entirely different propositions. While such definitions are sometimes used with ulterior purposes, impromptu definitions, if clearly stated *at the beginning* can reduce fuzziness and point up the contention. The reader should also be warned about the slanted or persuasive definition.

Before proceeding to empirical definitions let us look for possible applications of meaning analysis to highly abstract terms. Carnap has attempted to bring clarity to this generally unsatisfactory area of communication by introducing "explications."[39] In general, explication deals with broad terms like liberty, freedom, etc., and tries to make them more precise by pruning implications that are not relevant for the purpose at hand and perhaps by shifting the meaning slightly so that it will be more precise and, it is hoped, more usable. The method is of course a type of descriptive analysis. Hempel explains the process as follows:

> Explications, having the nature of proposals, cannot be qualified as being either true or false. Yet...they have to satisfy two major requirements: First, the explicative reinterpretation of a term...must permit us to reformulate, in sentences of a syntactically precise form, at least a large part of what is customarily expressed by means of the terms under consideration. Second, it should be possible to develop, in terms of the reconstructed concepts, a comprehensive, rigorous, and sound theoretical system.... Explication is not restricted to logical and mathematical concepts ....the notions of purposiveness and of adaptive behavior...have become the objects of systematic explicatory efforts.[40]

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[38] Carl G. Hempel, *op. cit.*, p. 18.

[39] Rudolf Carnap, *Logical Foundations of Probability* (Chicago, University of Chicago Press, 1950), esp. chapter 1.

[40] Carl G. Hempel, *op. cit.*, pp. 11, 12.

For purposes of research in accounting as well as in general scientific inquiry it is ordinarily found that "real" definitions take the form of empirical requirements i.e., instructions. These definitions specify the necessary and sufficient conditions for identifying the phenomenon under discussion. They are therefore often stated in the form of a scientific law, e.g., as a kind of explanation. The definition given above: "x is a current asset if and only if x has value and x is converted into cash within the following financial cycle," has empirical content. In effect, the reader is told to take an x (a property in the legal and not logical sense), examine it for the presence of value and examine it again for whether it has been converted into cash during the required period (or appraise the likelihood of such a conversion). If x meets both of these empirical tests, it has met the necessary and sufficient conditions for inclusion among current assets. A real definition of this empirical nature gives, in effect, instructions that may be followed to find out whether the item is a member of the class covered by the definition. Mathematicians usually build "constructive" proofs which are analytic in nature. The technique is essentially an instruction to "take an x" which is stipulated to be a member of the specified set and with appropriate application of rules find whether or not a theorem can be satisfied. Instead of empirical content or investigation in the ordinary sense the testing is done by way of the accepted rules of mathematics and logic -- the proof is therefore analytic and is not synthetic.

A similar controversy about definitions arises over the requirement for the use of only "observation" terms in definitions. Most accountants and other non-philosophers probably take a phenomenalistic approach to evidence in the sense that immediate sense perceptions are assumed to be the final test of knowledge. What then is more reasonable than to insist that all definitions be expressable in primitive terms that are related directly to our perceptual apparatus -- observation terms. Observation terms may in turn be defined broadly enough to include pointer or meter readings of various kinds. It is perhaps generally agreed that such definitions are highly desirable for scientific and other purposes, but some concepts are so complicated that such definitions fail to include all relationships that need to be included for productive investigation. Hempel, Carnap and others have pointed out that there are "at least two kinds of terms which raise difficulties: disposition terms, for which correctness of the thesis is at least problematic, and quantitative terms, to which it surely does not apply." Hempel suggests a conditional definiens with the definiendum having a "disposition," and appears to follow Carnap who suggested "reduction" sentences that give partial definitions.[41] Regular definitions seem~~s~~ to constitute the limiting case, because reduction sentences give only necessary conditions.

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[41] *Ibid.*, pp. 24, 25. Hempel suggests "magnetic," "elastic," "fissionable" as examples of disposition terms. See Rudolf Carnap, "Testability and Meaning," *Philosophy of Science*, III, No. 4 (1936), pp. 419-471 and IV, No. 1 (1937) pp. 1-40.

Definitions are tightened by adding more and more reduction sentences, i.e., more requirements. A reduction approach to value, for example, is essentially the one used now by economists. The reduction statements concern scarcity relative to desire and ability at a specified time. Nothing is said about many types of value or about whether there would be value with no individuals or at different times with different subjective attitudes. This type of definition is impromptu in the better sense of the word, for most economists are honest enough to explain the narrow meaning by the adjective "economic" placed before the term.

A further objection to the strict phenomonenalistic approach is that it cannot cover adequately "numerically measurable" quantities such as length. Clearly it is not possible to apply a finite vocabulary to the mathematical concepts of continuum, limit, instantaneous and other concepts necessary for scientific investigation. While an empiricist from the field of accounting would no doubt assert that the non-observable aspects are relatively unimportant, Hempel holds that it is precisely these constructs which permit science to take such strides as it has taken.[42]

Wilder, a theoretical mathematician, expresses the mathematician's attitude toward definitions as follows:

> When a mathematician gives a definition, it is intended that it will be not a mere synonym (such as "aggregation" for "collection") which the reader may happen to know the meaning of, but a criterion for identifying; a characterization of the thing defined....Incidentally, this kind of definition is probably one of the most difficult notions to get over to the student of mathematics....if he wants to know whether something is a certain type of mathematical entity which has previously been defined, he should see if it satisfied the criterion given in the definition.[43]

Before leaving the area of definitions another item requires at least brief mention. Hempel not only holds that observational definitions are too narrow for modern science but he insists that reduction sentences are also inadequate. Some of the measurable entities (metric concepts) are broader and in Hempel's terms "theoretical constructs."[44]

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[42] Ibid., p. 31, "...it is precisely these 'fictitious' concepts rather than those fully definable by observables which enable science to interpret and organize the data of direct observation by means of a coherent and comprehensive system which permits explanation and prediction. Hence, rather than exclude those fruitful concepts on the ground that they are not experientially definable, we will have to inquire what non-definitional methods might be suited for their introduction and experiential interpretation."

[43] Raymond L. Wilder, Introduction to the Foundation of Mathematics (New York: John Wiley & Sons, 1952), p. 52.

[44] Carl G. Hempel, op. cit., p. 32.

Terms of this kind mass, force, volume, proton are not introduced by definitions or reduction chains based on observables; in fact, they are not introduced by any piecemeal process of assigning meaning to them individually. Rather, the constructs used in a theory are introduced jointly, as it were, by setting up a theoretical system formulated in terms of them and by giving this system an experiential interpretation, which in turn confers empirical meaning on the theoretical constructs.

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